

80-FOI-967
AF Div

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Tentative
Record of Decision

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MEMORANDUM FOR THE PRESIDENT

SUBJECT: Theater Nuclear Forces (U)

Our continuing review of theater nuclear and related chemical and biological forces leads us to the following major conclusions:

1. We buy theater nuclear forces primarily to deter limited nuclear war. If deterrence should fail, these forces give us options to fight such a war. Our recommended forces are generally appropriate in number and mix for the tasks we have identified.

2. The most serious limited war tactic the Pact could use in NATO's Center Region is a tactical nuclear attack using terrain fire against NATO's front-line forces. Unless it is clear to the Pact that NATO's theater nuclear forces could survive such an attack and inflict unacceptable damage on Pact forces, NATO's forces might not deter the Pact. We need to consider terrain fire exchanges between Pact and NATO forces, particularly those initiated by the Pact, to evaluate our deterrent. Our recommended forces and warheads, if properly deployed, should provide an adequate deterrent.

3. Tactical nuclear weapons are not a substitute for conventional forces. If we are losing a conventional war in NATO's Center Region, we may have a nuclear option to counter the advance, but we cannot count either on stopping the advance if the other side also uses nuclear weapons or on limiting further escalation if we initially succeed.

4. It is unlikely that we would need to consider using nuclear weapons in Asia unless the Chinese use them first or assist their allies with massive land forces and we cannot possibly hold conventionally. Even under the latter circumstances, we must carefully weigh the objections to the use of nuclear weapons against the net military benefits we might gain. Now that China has some nuclear capability, we cannot expect to use nuclear weapons in Asia without retaliation.

6. We need only enough lethal chemical capability to deter the Soviets from using chemicals in Europe. If deterrence should fail, this lethal chemical capability will provide us with an option to fight a limited conflict using chemical weapons. We need some incapacitating chemicals, but only for use in those situations where civilians are mingled with enemy troops.

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(b) (1)

FOI CASE NO. 80-FOI-967
Document of Documents

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We recommend:

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A summary of theater nuclear forces and warheads is shown on page 5. Detailed tables are attached.

I. THEATER NUCLEAR FORCES IN EUROPE

A. The Role of Theater Nuclear Weapons in Europe

Our basic military objective in Europe is to deter any kind of Warsaw Pact aggression. NATO's conventional forces are approximately in balance with those of the Pact and should be sufficient to deter a conventional attack or contain one if deterrence fails. Our strategic nuclear forces deter a general nuclear war involving attacks on U.S. cities or those of our European allies.

We also want to deter limited nuclear attacks on our theater forces. The Pact might hope to gain an advantage by initiating a limited nuclear attack and quickly destroying a large part of the NATO land forces without destroying much of Germany. If we could destroy 25% to 50% of the Pact land forces in a restrained nuclear retaliation, we could deny them this option. Unless it is clear to the Pact that NATO's theater nuclear forces could survive such an attack and inflict unacceptable damage on Pact forces, NATO forces might have little effect in deterring the Pact.

A further potential objective, but one we could not count on achieving, is defeating the Pact by using theater nuclear weapons if a conventional defense failed. Our analysis shows we cannot expect to remove the Pact's capability to destroy NATO's military forces or society. Thus, we cannot count on controlling territory without having it destroyed. At best we could plan on destroying enough of the Pact forces to prevent them from controlling NATO countries.

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We plan our Europe-oriented theater nuclear forces primarily for deterrence. In doing so, we provide an adequate war-fighting capability. However, we should not buy more forces to provide the capability to fight a limited nuclear war of long duration. It is unlikely that any war in which thousands of nuclear weapons were used could remain limited. We should concentrate new investments on conventional rather than theater nuclear forces. Conventional forces, which compete for the same resources as theater nuclear forces, provide a much better chance of avoiding a nuclear holocaust.

	FY 61	FY 62	FY 63	FY 64	FY 65	FY 66	FY 67	FY 68	FY 69	FY 70	FY 71	FY 72	FY 73	FY 74	FY 75	FY 76	FY 77
Tactical Aircraft:																	
Aircraft, Dair Equipment (UE)																	
Bombs/Air-to-Surface Missiles (ASMs)																	
Tactical Missiles																	
Corporal																	
Launchers																	
Warheads																	
Nose																	
Launchers																	
Warheads																	
Bombard John b/																	
Launchers																	
Warheads																	
Little John																	
Launchers																	
Warheads																	
Pershing c/																	
Launchers																	
Warheads																	
Sergeant																	
Launchers																	
Warheads																	
Davy Crockett																	
Launchers																	
Warheads																	
Lance																	
Launchers																	
Warheads																	
Subtotal Tactical Missile Launchers																	
Subtotal Tactical Missile Warheads																	
Nuclear Artillery																	
8" Howitzer																	
Tubes																	
Warheads																	
15mm Howitzer																	
Tubes																	
Warheads																	
Subtotal Nuclear Artillery Tubes																	
Subtotal Nuclear Artillery Warheads																	
Atomic Demolition Munitions (ADMs)																	
Team																	
Warheads																	
Air Defense																	
Falcon																	
Aircraft (UE)																	
Warheads																	
Mike-Mercules																	
Launchers																	
Warheads																	
Subtotal Air Defense Aircraft/Launchers																	
Subtotal Air Defense Warheads																	
Total Aircraft/Launchers/Tubes/Teams d/			</														

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Our stockpile needs for the Center Region are examined below. In the coming year we will analyze our needs in Europe's Southern Region in a similar manner. We have included a discussion of a new concept -- the initial defensive use of nuclear weapons restricted to NATO territory -- which we are asking the JCS and the Services to do additional work on in the future. We are also asking the JCS and the Services to do additional work on the nuclear terrain fire concept.

B. Land Forces in Europe's Center Region

We currently estimate that NATO and the Warsaw Pact could have the following land forces in the Center Region by M+90 in FY 72: NATO--42 division forces (1.4 million men) and the Pact--90 divisions (1.1 million men). The nuclear capabilities of these land forces, excluding ADMs and air defense, are shown below.

Delivery System

Tactical Missiles
Tactical Rockets
Tube Artillery
Totals

C. Nuclear Defense Against a Conventional Invasion in the Center Region With Effects Limited to NATO Territory

If the Warsaw Pact attacked NATO forces with conventional weapons and NATO could not hold, as a minimum level of limited nuclear war we might consider using nuclear weapons in NATO territory alone. Restricting the use of nuclear weapons to friendly territory might be less likely to lead to escalation than attacking targets in East Germany or other Pact countries.

The following scenario illustrates the possible use of nuclear weapons in West Germany to repulse a Pact conventional attack. It is assumed that the Pact attacks in one to three thrusts, NATO forces are pushed back from their main defensive positions, and the local force ratios are such that NATO cannot repulse the attacks conventionally. When the Pact forces have penetrated about 50 kilometers (km) into West Germany, NATO uses nuclear weapons, but only on the Pact divisions (assumed to be about 15 in each thrust that are in NATO territory. NATO is assumed to have about 18 divisions in the 0 to 50 km zone opposing the three thrusts, so only about half of the Pact divisions would have to be defeated to reduce the force ratio to the point where the attack would be stopped.

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If nuclear weapons were only used on Pact forces in West Germany, the Pact could not respond with nuclear weapons against NATO forces unless they used them on NATO territory. They would either have to: (1) cease the attack, (2) continue attacking conventionally by bringing in additional forces, (3) escalate the conflict by using nuclear weapons on NATO forces in NATO territory, or (4) combine courses of action (2) and (3). Their forces, are not as well-designed for limited discrete fire attacks as NATO's forces, and any Pact retaliation would appear to be a terrain fire attack over a large area. To deter such a response, NATO must have a survivable theater nuclear capability, or be ready to use strategic weapons in the theater at this point.

D. Nuclear Defense Against Invasion in the Center Region Using Discrete Fire

The discrete fire concept has traditionally been the basis for analyzing our theater nuclear capability. The essence of this concept is that we must accurately locate and hit a target to destroy it.

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The discrete target concept permits us to estimate the stockpile we would need if we could fight such a war. Such a stockpile includes enough nuclear weapons for restricted use, limited to NATO territory, if we decided to use them that way. We cannot count on fighting a prolonged nuclear war using thousands of tactical nuclear weapons. Thus, providing more weapons than needed to defeat the Warsaw Pact with discrete fire would not improve our capability. Other factors such as command and control limitations, destruction of our support means, and possible escalation of the conflict would do more to determine the outcome of a war than additional nuclear warheads.

E. Nuclear Defense Against Invasion in the Center Region Using Terrain Fire

A massive Pact nuclear attack, using terrain fire along the entire Center Region front (that is, covering the area where enemy troops are most likely to be located with the lethal effects of air-burst nuclear weapons*) probably constitutes the most serious tactic the enemy could use against our forces. We should assess our capability to deter such an attack. Such a capability would include longer range tactical delivery systems which could survive a Pact attack on our front-line forces and then be capable of inflicting unacceptable damage on Pact forces. Assuming they are properly deployed, our recommended Pershing and Lance systems should provide an adequate terrain fire capability.

As shown in the table on page 6, the Pact has concentrated its nuclear capability in longer range, mobile missiles and rockets. These systems are relatively invulnerable to discrete fire attacks because they would be far from the front lines and difficult to find. Terrain fire is an option we should consider because it reduces the problem of locating targets. More important, we need to consider the terrain fire concept to evaluate our capability to deter the Warsaw Pact.

*Includes an overpressure of at least 10 pounds per square inch (psi), an initial gamma radiation dose of 500 roentgens (1,000 roentgens for a yield of less than 200 KT), and 11 calories per square centimeter of thermal radiation (50 calories per square centimeter for yields of more than 60 KT).

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By estimating the tactical deployment of NATO and Pact land forces, we can calculate the geographical area they would be likely to occupy in a conventional war-fighting posture and in a dispersed posture. Only some 30% of the total area in the Center Region is suitable for concealing mechanized forces, so only that portion would have to be covered with terrain fire. The fraction of Pact and NATO forces that would survive various terrain fire attacks provides a measure of each side's retaliatory capability.

In a conventional war-fighting posture, we assume that NATO and the Pact would have over 60% of their forces concentrated in the first 50 km on each side of the front lines. Each side would have about 600,000 troops in the area of the three thrusts and to a depth of 50 km. The next table shows the initial forces and capabilities on each side in the Center Region and those remaining after limited terrain fire attacks by each side. The attacks are restricted to the area of the three thrusts and to a depth of 50 km from the front lines.

Initial Forces and Capabilities	Capability Remaining After <u>a/ A Limited Terrain Fire Exchange b/</u>
------------------------------------	--

Men (Thousands)
Nuclear Launchers
Nuclear Warheads
<u>Lethal Area (Km²)</u>

- a/ Excludes tactical air, air defense, and strategic forces (Polaris and MR/IRBMs).
- b/ The results are based on a lethal area coverage (10 psi) degraded by the overlapping of multiple weapons and by those nuclear effects that fall outside the target area (60% for a 440-KT warhead).

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If the forces were concentrated as they would be for fighting a conventional war, NATO would have enough retaliatory capability to destroy 45% of the Pact's manpower using only a limited terrain fire attack. This should deter the Pact from using nuclear weapons against NATO forces in such a situation since they could not count on achieving a major advantage by doing so. The table on the preceding page includes a first strike by NATO to show that the Pact also has a retaliatory capability.

In the nuclear terrain fire exchange considered above, the total area covered by each side's terrain fire attack is about 7,500 sq km, or about 3% of the total area of West Germany. Total civilian casualties could be about five million. The use of nuclear weapons, especially terrain fire, is not attractive in such a situation. However, terrain fire would use longer range systems more effectively than discrete fire would for destroying Pact forces, and we need to consider terrain fire as well as discrete fire, to evaluate our theater nuclear deterrent.

If both the NATO and Pact forces were in a dispersed posture to reduce their vulnerability to nuclear attacks, fewer forces would be destroyed in limited terrain fire attacks, since only about 15% and 10% of the Pact and NATO manpower, respectively, might be in the first 50 km zone of the three thrusts. The Pact and NATO would, however, have additional troops along the front and to a greater depth. In a dispersed posture, we assume each side might have about 60% of its troops in the 0 to 100 km zone along the whole German front. With both forces dispersed and with unlimited terrain fire attacks using all tactical land force weapons, the results could be as shown in the next table.

<u>Initial Forces</u> <u>and Capabilities a/</u>	<u>Capability Remaining After an</u> <u>Unlimited Terrain Fire Exchange</u>
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Men (Thousands)	
Nuclear Launchers	
Nuclear Warheads	
Lethal Area (Km ²)	

a/ Excludes tactical air, air defense, and strategic forces (Polaris and MR/IRBMs).

NATO could not cover the whole front (about 750 km) with nuclear terrain fire to as great a depth as the Pact, but NATO forces could still destroy 20% of the Pact manpower in retaliation. On the other hand, the Pact could not count on gaining an advantage by using such a dispersed

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posture because in their view NATO might attack first with nuclear weapons to pre-empt a Pact terrain fire attack and destroy about 35% of the Pact manpower (more, if the attack occurred before the Pact forces were well-dispersed). Even if the Pact believed that NATO would not strike first, they would have to consider the possibility of retaliatory U.S. attacks with strategic nuclear forces since terrain fire attacks to a depth of 80 km (destroying as much as 25% of Germany) would not necessarily be considered limited nuclear war.

The foregoing analysis suggests the following conclusions:

1. A survivable theater nuclear capability which could inflict unacceptable damage on Pact forces should deter the Pact from using tactical nuclear weapons. Terrain fire is an option to consider for retaliation to a massive Pact attack which could destroy NATO's front-line forces. Terrain fire could cause more damage to European society than limited discrete fire. However, we cannot reasonably expect a war to stay limited if thousands of nuclear weapons are used for discrete fire.

<u>System</u>	<u>Maximum Range</u>	<u>Percent of Launchers that Might Survive a Terrain Fire Attack Along the Whole Front to Various Depths</u>
Pershing		
Sergeant		
Honest John		
Tube Artillery		

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Theater Nuclear Requirements for the Center Region

We cannot plan to fight a limited nuclear war of long duration, using thousands of nuclear weapons in either discrete or terrain fire, because of the vulnerability of most of our warheads and delivery systems, the probable destruction of our support means by enemy attacks, limitations on command and control, and the great pressures to escalate the conflict. We need only enough nuclear weapons to be able to respond up to the point where continued limitation of a nuclear conflict would be very improbable. When additional discrete fire would do as much damage to European society as more effective limited terrain fire attacks, we should consider using terrain fire.

Tactical Bombs
Mace
Pershing
Sergeant
Honest John
Tube Artillery
ADMs
Air Defense
ASW Depth Bombs
Total Nuclear Warheads

Our theater nuclear capabilities are limited far more by our lack of adequate command, control, and support than by the size of our nuclear stockpile. Considering these limitations and the competing demands on our resources, we do not need to maintain such a large stockpile in Western Europe.

G. Allied Support

We have committed ourselves to support certain allied units and we should continue to do so. At the same time we should reduce the number of bombs with which we support each allied squadron from about 1.1 to 1 per Unit Equipment (UE) aircraft. We cannot count on using tactical aircraft in a nuclear war except in a pre-emptive strike by NATO, and one bomb per UE aircraft is enough to cover such a possible but unlikely situation. We should continue discussions with our allies about Lance, but defer a decision on support until we know if the system works and whether we will in fact procure it. Our detailed recommendations on support ceilings and ceilings for discussion with our allies are shown in the table on page 28.

II. THEATER NUCLEAR FORCES IN ASIA

A. Role of Nuclear Weapons in Asia

We maintain nuclear forces in Asia for two broad objectives. First, we want to deter the use of nuclear weapons by the Chinese. We also wish to assure our Asian allies that we will use nuclear weapons in their defense if the Chinese attack them with nuclear weapons. Second, should deterrence fail, we want a nuclear war-fighting option to defend against a Chinese invasion. Korea presents the worst threat of a major invasion where we might have to consider using nuclear weapons. Unless the Chinese assist their allies with massive land forces, we should not have to consider using nuclear weapons against the other Asian Communist land forces. Our programmed forces can satisfy these two objectives.

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Current estimates of China's nuclear capability are shown in the next table.

	China's Nuclear Forces a/		
	FY 68	FY 72	FY 77
<u>Strategic Forces</u>			
ICBMs, MRBMs, and SLMs			
Bombers			
Nuclear Bombs and ASMs			
Air Defense Launchers			
Air Defense Warheads			
<u>General Purpose Forces</u>			
Nuclear-Capable Aircraft			
Nuclear Bombs and ASMs			
Frog Missiles			
Total Nuclear Warheads			

Now that China has some nuclear capability, we cannot use nuclear weapons without risk of retaliation. Even in a pre-emptive strike, we could not be sure of destroying all of China's nuclear capability. With just a few surviving weapons, the Chinese could destroy some of our important bases, airfields, and ports. Loss of these facilities could substantially reduce our logistic and air advantages. Thus, there are offsets to the military advantage we might gain from initiating the use of nuclear weapons. Moreover, the resulting deaths and destruction and their long-range political consequences could outweigh the advantages we might gain by using nuclear weapons. Thus, there are potentially compelling military and political reasons to avoid the use of nuclear weapons except under extreme circumstances.

The threat of a conventional Soviet invasion in Asia is small, and the Soviets' use of tactical nuclear weapons against free Asian countries is unlikely. Soviet interests in Asia are probably not important enough to risk using nuclear weapons in limited conflicts. In any case, our nuclear options against the Chinese should be adequate against the Soviets.

B. The Threat to Korea

The North Koreans have a force of about 281,000 men; the Chinese could deploy about 650,000 men into Korea by M+70. The narrow mountainous peninsula probably restricts the effective deployment of land forces (excluding coolies) to about one million (the maximum used during the Korean war), but the Chinese might allocate more troops to an invasion. China has 2.3 million men in its active land forces and about 100 million men for potential army use.

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The Chinese may also be limited by their willingness to accept casualties. In the Korean War, however, the Communists suffered about 1.5 million casualties. The peak casualty rate occurred in April-May, 1951, when they lost 250,000 men (killed, wounded, and captured) in five weeks. After that they fought for two more years and lost 400,000 more men.

We often think of the Chinese army as a large mass of men, thus as an ideal nuclear target. This concept is highly misleading because the Chinese apply the "massed human wave" tactic in a very specific way. They mass only when they find one of our weak or isolated company positions, preferably using a 4 to 1 manpower ratio. The Chinese do not need to concentrate more than a few hundred meters from the front lines since they are not dependent on mechanized equipment. Moreover, dispersing is to their advantage because it makes them less vulnerable to our artillery and air attacks. Their dispersal behind the front lines is also consistent with our experience during the Korean War. Reconnaissance pilots were often unable to identify troops on the ground, although other facts later confirmed that the troops were there.

C. Conventional Defense Against an Invasion

The Republic of Korea (ROK) land forces alone should be able to defend successfully against a North Korean attack. Even against a combined Chinese/North Korean attack, it appears that they provide a substantial deterrent and a capability for initial defense. By furnishing equipment to the ROK rear area security divisions, we could improve the manpower ratio of Chinese/North Korean forces to ROK/U.S. forces to less than 1.5 to 1 (the ratio in 1951 when we stopped a Communist offensive). Moreover, the ROK forces are more effective now than they were in the 1950s. Thus, our conventional forces may be enough to stop a combined Chinese/North Korean attack, and we should not plan on necessarily initiating the use of nuclear weapons in this contingency.

D. Nuclear Defense Against an Invasion Using Discrete Fire

If we could not hold conventionally against a Chinese/North Korean attack, we might use discrete fire with nuclear weapons against targets at depths greater than one or two km in an attempt to inflict casualties at a high rate over a few days and destroy their will to fight. Typical targets for discrete fire would be company-sized units containing an

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average of about 100 men. Because most company-sized targets more than one km from the front would be widely dispersed, we could not find more than a few hundred such targets in a few days. By maintaining about 500 land force weapons and tactical bombs, which would be sufficient to kill 50,000 soldiers, we can provide an option to inflict casualties at a very high rate over a few days. We could not take away the ability of the Chinese to continue an invasion by using nuclear weapons this way, but we might destroy their will to fight.

To take away the ability of the Chinese to continue a determined invasion, we would have to consider destroying a million or more troops. To do this using discrete fire would require using 10,000 or more nuclear warheads over a period of months, not days, assuming we could locate that many worthwhile targets. Even if we could locate targets, we would still not be sure of stopping a determined invasion. Thus, we should not calculate our requirements for Korea on the assumption that we can destroy the war-fighting capability of the Chinese by using discrete nuclear fire in an extended conflict.

E. Nuclear Defense Against an Invasion Using Terrain Fire

If we cannot hold against the Chinese conventionally, and if we cannot destroy their will to fight by causing a very high casualty rate with discrete nuclear fire, we might consider using nuclear terrain fire. However, it would be terribly destructive because the enemy forces would be widely dispersed and we would have to cover all the terrain.

We cannot count on destroying the war-fighting capability of the Chinese by using terrain fire to a limited depth beyond our front lines. The Korean peninsula is about 180 km wide near the Demilitarized Zone (DMZ). To provide terrain fire to a depth of 50 km would require covering about 9,000 square km. For a greater depth of fire, the area would be proportionately larger. The numbers of tactical nuclear bombs that would be needed for terrain fire of this magnitude are shown in the following table.

Potential Communist Troop Casualties	Depth of Fire on Peninsula (Km) a/	Number of Delivered Weapons b/	Area Covered with at Least 10 Psi (Square Km) c/
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- a/ Pyongyang is about 150 km north of the DMZ and the Yalu River is about 400 km north of it.
- b/ Using a mix of tactical bombs based on the current tactical bomb stockpile, excluding about 500 with the lowest yields.
- c/ The total land area of North Korea is about 120,000 square km.

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Using terrain fire to a depth of about 400 km to get the maximum number of troop casualties, we would kill most of the 12 million North Korean civilians and probably some friendly civilians as well. This would clearly be undesirable.

Instead of using terrain fire from the front lines to various depths, we could consider using it in the 50 to 150 km zone to destroy the local reserves and supplies. Our conventional forces should be able to defeat a front-line force of 200,000 to 300,000 men in such a situation.

F. Interdicting Logistics to Reduce Supply

An on-line force of about 300,000 North Koreans and Chinese might require about 1,400 tons of ammunition plus other supplies per day. With no interdiction, about 18,000 men would be needed to operate the transportation system. If we could keep all major choke points (about 100) destroyed permanently, the Chinese could overcome the obstacles with about a million coolies to hand-carry supplies around the choke points. However, we could not keep all major choke points destroyed, even with nuclear weapons.

G. Theater Nuclear Requirements for Korea

The above analysis suggests the following conclusions:

1. We cannot count on defeating a determined Chinese invasion by using nuclear weapons, and we should not plan on using them initially, though we should have concepts and contingency plans for their use. We should improve the conventional capabilities of our allies and rely on them as much as possible to stop conventional attacks.

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3. We could consider resorting to terrain fire, but only if our conventional defense failed and the Chinese did not come to terms after we had used limited nuclear discrete fire. Even then we could not be certain of stopping a determined invasion, and we might kill as many as five million North Korean civilians. If we decided to use terrain fire in Korea, we could use high-yield strategic bombs.

4. Though we may use nuclear weapons in an interdiction role, we cannot count on stopping an invasion by interdicting logistics, and we should not stockpile nuclear warheads for this purpose.

Our end-FY 68 stockpile of nuclear warheads in Korea and the stockpile we recommend for Korea in FY 70 are shown below.

	<u>FY 68</u>	<u>Recommended for FY 70</u>
Sergeant		
Tactical Bombs, Honest John,		
and Tube Artillery		
Davy Crockett		
ADMs		
Nike Hercules		
Total Nuclear Warheads		

H. Peacetime Deployments to Korea

III. MIX OF THEATER NUCLEAR FORCES

In developing and procuring new tactical nuclear weapon systems, we should stress survivable, longer range, mobile missile systems in order to

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✓ A. Tactical Bombs

B. Low-Yield, Tactical Air-to-Surface Missiles (ASM's)

C. 155mm Howitzers

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million more than that required to maintain the current warheads.

D. Sergeant

Subject to negotiations with the Italians, we recommend phasing out the Sergeant battalion in Italy in FY 70. We also recommend phasing out the Sergeant battalion in Korea in FY 71 for an annual savings of \$6.3 million. We do not need Sergeant in Korea for limited discrete fire, and if we decide to use terrain fire, we can rely on air-delivered weapons in Asia. Finally, we recommend retiring the Sergeant battalions in Germany and the United States (starting in FY 73) when Lance is deployed.

E. Lance and Honest John

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F. Atomic Demolition Munitions (ADMs)

ADMs are nuclear charges designed to delay an advancing army by placing obstacles in its path. While the military benefits of using ADMs can be sensitive to the timeliness of their release and we should keep a capability to use them forward of our main battle positions, the possible severe reaction to the first detonation of any nuclear device cautions against early use of ADMs except under the most extreme circumstances.

We have asked the JCS and the Services to study an ADM employment concept in which we would consider using ADMs primarily to the rear of the main defensive positions in the event we are not able to defend conventionally against a conventional attack. Under this concept, we would not plan on using ADMs between the borders of enemy territory and our own main defensive positions. In order to avoid using nuclear weapons if at all possible, we would plan to test our conventional forces in the main defensive positions before using nuclear weapons. Then, if it appeared that we were not able to defend conventionally, we would consider using ADMs (which, being defensive weapons, could be considered less escalatory than other nuclear systems) to help stop the attack. Thus, the primary region where we would consider using ADMs would be in the area from about 25 to 100 km behind our initial main defensive positions--behind the place where we could first really test our conventional defenses and in front of the region where other nuclear responses would clearly be more appropriate. This concept would not preclude the possible use of ADMs in other areas, such as along the main defensive positions rather than further to the rear, and it would be consistent with our flexible response strategy and the new strategy adopted by NATO.

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IV. CHEMICAL AND BIOLOGICAL WARFARE FORCES

A. Lethal Chemicals

Lethal chemicals can kill many unprotected troops quickly. Casualties are very low against protected troops, but the combat effectiveness of troops in protective clothing is degraded.

We estimate that the Soviets have about 275,000 tons of lethal chemical agents, compared to about 35,000 tons for the United States. (The composition of the U.S. stockpile is shown in the table on page 29.) For defense, we have masks and, to prevent absorption of chemicals through the skin, some old individual protection suits and collective protection devices.

In Soviet doctrine, lethal chemicals are usually considered in conjunction with nuclear weapons. The Soviets could escalate a conventional conflict in Europe by using nuclear weapons or chemicals, or both. Our theater nuclear capability helps to deter their use of nuclear weapons. To deter the Soviets from using chemicals alone, we must be able to prevent them from gaining a significant advantage from their use. To do this we need enough defensive capability to prevent a large number of casualties and an offensive capability to force the Soviets to take protective measures.

Europe is the only area where we need a deterrent against the use of lethal chemicals. The Soviets seem intent on avoiding the use of nuclear weapons in limited conflicts in other areas and probably would also forego the use of chemicals. We have no evidence that the Chinese have a significant lethal chemical war-fighting capability. Our conventional forces provide sufficient alternatives against other countries.

For the defensive component of our lethal chemical deterrent in Europe, we need individual protection (masks and protective suits) for our land forces and forward air bases, some warning capability, and protective shelters for forward medical units. Large numbers of warning devices and protective shelters would contribute to our ability to fight a prolonged war, but would increase our deterrent very little. For the offensive component of our chemical deterrent in NATO's Center Region, we need enough chemical capability to expose unprotected front-line troops to a 10% casualty rate per day for about 10 days of intense combat (equivalent to a 20 to 90 day war, depending on usage rates).

For NATO's Center Region, the approximate additional 10-year costs for equipment and munitions (above our current inventories) to provide a lethal chemical deterrent, which would give us some war-fighting capability, are shown in the next table.

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Capability	Additional 10-Year Cost a/ (In \$ Millions)
Defensive Protection for 11 U.S. Division Forces (DFs) and 5 Forward Air Bases	\$ 400
Offensive Capability for the U.S. and Allied Sectors	140
Total Costs	\$ 540

a/ Provides individual protection for troops and a 10-day offensive capability at 750 tons per day.

We should procure the additional equipment to provide a deterrent capability for NATO's Center Region, giving priority to improvements in our defenses against lethal chemicals. We recommend against procuring a chemical capability to fight a prolonged war. Any extensive use of lethal chemicals would probably lead to a nuclear war. We will address our lethal chemical needs for other NATO regions in the coming year.

B. Incapacitating Chemicals (Including Riot Control Agents)

We might benefit from using incapacitating chemicals in situations where civilians are mingled with enemy troops and we do not have reasonable conventional alternatives. For such situations, we could benefit from improvements that would increase the duration of the effects now available with tear gas. However, we should not use incapacitants which make people irrational and unpredictable. Nor should we use presently available chemical incapacitants in ordinary combat against any enemy forces because: (1) feasible conventional alternatives are almost always available, (2) we do not want to risk enemy retaliation with lethal chemicals, and (3) we do not want to risk lowering the barriers to chemical warfare.

For the post-Vietnam Baseline Force, we should stockpile a 30-day supply of tear gas for one DF with air support and one Marine Expeditionary Force (MEF). This is enough for counterinsurgency operations. In addition, we should stockpile enough tear gas for civil disturbances. We should not increase our stockpiles of any other incapacitants until further research and development is done on improved agents.

We recommend disapproving the JCS proposal to buy a chemical incapacitating capability for all land and air forces at a 10-year cost of \$440 million (excluding costs for research, development, and operations in Vietnam).

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MEMORANDUM FOR THE PRESIDENT

SUBJECT: Theater Nuclear Forces (U)

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Our continuing review of theater nuclear and related chemical and biological forces leads us to the following major conclusions:

1. We buy theater nuclear forces primarily to deter limited nuclear war. If deterrence should fail, these forces give us options to fight such a war. Our recommended forces are generally appropriate in number and mix for the tasks we have identified.

2. The most serious limited war tactic the Pact could use in NATO's Center Region is a tactical nuclear attack using terrain fire against NATO's front-line forces. Unless it is clear to the Pact that NATO's theater nuclear forces could survive such an attack and inflict unacceptable damage on Pact forces, NATO's forces might not deter the Pact. We need to consider terrain fire exchanges between Pact and NATO forces, particularly those initiated by the Pact, to evaluate our deterrent. Our recommended forces and warheads, if properly deployed, should provide an adequate deterrent.

3. Tactical nuclear weapons are not a substitute for conventional forces. If we are losing a conventional war in NATO's Center Region, we may have a nuclear option to counter the advance, but we cannot count either on stopping the advance if the other side also uses nuclear weapons or on limiting further escalation if we initially succeed.

4. It is unlikely that we would need to consider using nuclear weapons in Asia unless the Chinese use them first or assist their allies with massive land forces and we cannot possibly hold conventionally. Even under the latter circumstances, we must carefully weigh the objections to the use of nuclear weapons against the net military benefits we might gain. Now that China has some nuclear capability, we cannot expect to use nuclear weapons in Asia without retaliation.

6. We need only enough lethal chemical capability to deter the Soviets from using chemicals in Europe. If deterrence should fail, this lethal chemical capability will provide us with an option to fight a limited conflict using chemical weapons. We need some incapacitating chemicals, but only for use in those situations where civilians are mingled with enemy troops.

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Tentative
Record of Decision

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We recommend:

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A summary of theater nuclear forces and warheads is shown on page 5. Detailed tables are attached.

I. THEATER NUCLEAR FORCES IN EUROPE

A. The Role of Theater Nuclear Weapons in Europe

Our basic military objective in Europe is to deter any kind of Warsaw Pact aggression. NATO's conventional forces are approximately in balance with those of the Pact and should be sufficient to deter a conventional attack or contain one if deterrence fails. Our strategic nuclear forces deter a general nuclear war involving attacks on U.S. cities or those of our European allies.

We also want to deter limited nuclear attacks on our theater forces. The Pact might hope to gain an advantage by initiating a limited nuclear attack and quickly destroying a large part of the NATO land forces without destroying much of Germany. If we could destroy 25% to 50% of the Pact land forces in a restrained nuclear retaliation, we could deny them this option. Unless it is clear to the Pact that NATO's theater nuclear forces could survive such an attack and inflict unacceptable damage on Pact forces, NATO forces might have little effect in deterring the Pact.

A further potential objective, but one we could not count on achieving, is defeating the Pact by using theater nuclear weapons if a conventional defense failed. Our analysis shows we cannot expect to remove the Pact's capability to destroy NATO's military forces or society. Thus, we cannot count on controlling territory without having it destroyed. At best we could plan on destroying enough of the Pact forces to prevent them from controlling NATO countries.

No! Deleted!

We plan our Europe-oriented theater nuclear forces primarily for deterrence. In doing so, we provide an adequate war-fighting capability. However, we should not buy more forces to provide the capability to fight a limited nuclear war of long duration. It is unlikely that any war in which thousands of nuclear weapons were used could remain limited. We should concentrate new investments on conventional rather than theater nuclear forces. Conventional forces, which compete for the same resources as theater nuclear forces, provide a much better chance of avoiding a nuclear holocaust.

FY 61	FY 65	FY 66	FY 67	FY 68	FY 69	FY 70	FY 71	FY 72	FY 73	FY 74	FY 75	FY 76	FY 77
-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------

Aircraft, Ball Equipment (IX)
Bombs/Air-to-Surface Missiles (ASMs)

Сотрота
Ламачоту
Барбанду

Wages
Lamache TV
Highlands

Robert John b/
Lacourche
Berthoud

Little John
Lunches
Mortgage

Purchasing £
Lunches for
Martha and

Burgundy
 Low chairs
 Northside

Davy Crockett
Lunches
Northside

Lunch
 Lunchers
 Lunches

Subrotal Tactical Missile Launchers

Subtotal Tactical Missile

8" Bowties
Tubes
Wardrobe

11 Jan 1942
 Tulsa
 Harmond

Subtotal: Nuclear Artillery Tubes

Subtotal Nuclear Artillery
Warheads

Team
Members

Palcos
Aircraft (DI)
Harbours

Rules for the Rules
 Law of the
 The Rules

Subtotal Air Defense Aircraft/
Launchers

Subtotal: Air Defense Warheads

Total Aircraft/Launchers/
Tubes/Tenets 4/

Total Bomb / ASTG / Warhead 6/

Our stockpile needs for the Center Region are examined below. In the coming year we will analyze our needs in Europe's Southern Region in a similar manner. We have included a discussion of a new concept -- the initial defensive use of nuclear weapons restricted to NATO territory -- which we are asking the JCS and the Services to do additional work on in the future. We are also asking the JCS and the Services to do additional work on the nuclear terrain fire concept.

B. Land Forces in Europe's Center Region

We currently estimate that NATO and the Warsaw Pact could have the following land forces in the Center Region by M+90 in FY 72: NATO--42 division forces (1.4 million men) and the Pact--90 divisions (1.1 million men). The nuclear capabilities of these land forces, excluding ADMs and air defense, are shown below.

Delivery System

Tactical Missiles
Tactical Rockets
Tube Artillery
Totals

C. Nuclear Defense Against a Conventional Invasion in the Center Region With Effects Limited to NATO Territory

If the Warsaw Pact attacked NATO forces with conventional weapons and NATO could not hold, as a minimum level of limited nuclear war we might consider using nuclear weapons in NATO territory alone. Restricting the use of nuclear weapons to friendly territory might be less likely to lead to escalation than attacking targets in East Germany or other Pact countries.

The following scenario illustrates the possible use of nuclear weapons in West Germany to repulse a Pact conventional attack. It is assumed that the Pact attacks in one to three thrusts, NATO forces are pushed back from their main defensive positions, and the local force ratios are such that NATO cannot repulse the attacks conventionally. When the Pact forces have penetrated about 50 kilometers (km) into West Germany, NATO uses nuclear weapons, but only on the Pact divisions (assumed to be about 15 in each thrust that are in NATO territory. NATO is assumed to have about 18 divisions in the 0 to 50 km zone opposing the three thrusts, so only about half of the Pact divisions would have to be defeated to reduce the force ratio to the point where the attack would be stopped.

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If nuclear weapons were only used on Pact forces in West Germany, the Pact could not respond with nuclear weapons against NATO forces unless they used them on NATO territory. They would either have to: (1) cease the attack, (2) continue attacking conventionally by bringing in additional forces, (3) escalate the conflict by using nuclear weapons on NATO forces in NATO territory, or (4) combine courses of action (2) and (3). Their forces, are not as well-designed for limited discrete fire attacks as NATO's forces, and any Pact retaliation would appear to be a terrain fire attack over a large area. To deter such a response, NATO must have a survivable theater nuclear capability, or be ready to use strategic weapons in the theater at this point.

D. Nuclear Defense Against Invasion in the Center Region Using Discrete Fire

The discrete fire concept has traditionally been the basis for analyzing our theater nuclear capability. The essence of this concept is that we must accurately locate and hit a target to destroy it.

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The discrete target concept permits us to estimate the stockpile we would need if we could fight such a war. Such a stockpile includes enough nuclear weapons for restricted use, limited to NATO territory, if we decided to use them that way. We cannot count on fighting a prolonged nuclear war using thousands of tactical nuclear weapons. Thus, providing more weapons than needed to defeat the Warsaw Pact with discrete fire would not improve our capability. Other factors such as command and control limitations, destruction of our support means, and possible escalation of the conflict would do more to determine the outcome of a war than additional nuclear warheads.

E. Nuclear Defense Against Invasion in the Center Region Using Terrain Fire

A massive Pact nuclear attack, using terrain fire along the entire Center Region front (that is, covering the area where enemy troops are most likely to be located with the lethal effects of air-burst nuclear weapons*) probably constitutes the most serious tactic the enemy could use against our forces. We should assess our capability to deter such an attack. Such a capability would include longer range tactical delivery systems which could survive a Pact attack on our front-line forces and then be capable of inflicting unacceptable damage on Pact forces. Assuming they are properly deployed, our recommended Pershing and Lance systems should provide an adequate terrain fire capability.

As shown in the table on page 6, the Pact has concentrated its nuclear capability in longer range, mobile missiles and rockets. These systems are relatively invulnerable to discrete fire attacks because they would be far from the front lines and difficult to find. Terrain fire is an option we should consider because it reduces the problem of locating targets. More important, we need to consider the terrain fire concept to evaluate our capability to deter the Warsaw Pact.

*Includes an overpressure of at least 10 pounds per square inch (psi), an initial gamma radiation dose of 500 roentgens (1,000 roentgens for a yield of less than 200 KT), and 11 calories per square centimeter of thermal radiation (50 calories per square centimeter for yields of more than 60 KT).

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By estimating the tactical deployment of NATO and Pact land forces, we can calculate the geographical area they would be likely to occupy in a conventional war-fighting posture and in a dispersed posture. Only some 30% of the total area in the Center Region is suitable for concealing mechanized forces, so only that portion would have to be covered with terrain fire. The fraction of Pact and NATO forces that would survive various terrain fire attacks provides a measure of each side's retaliatory capability.

In a conventional war-fighting posture, we assume that NATO and the Pact would have over 60% of their forces concentrated in the first 50 km on each side of the front lines. Each side would have about 600,000 troops in the area of the three thrusts and to a depth of 50 km. The next table shows the initial forces and capabilities on each side in the Center Region and those remaining after limited terrain fire attacks by each side. The attacks are restricted to the area of the three thrusts and to a depth of 50 km from the front lines.

Initial Forces and Capabilities	a/	Capability Remaining After A Limited Terrain Fire Exchange	b/
------------------------------------	----	---	----

Men (Thousands)	
Nuclear Launchers	
Nuclear Warheads	
Lethal Area (Km ²)	

- a/ Excludes tactical air, air defense, and strategic forces (Polaris and MR/IRBMs).
- b/ The results are based on a lethal area coverage (10 psi) degraded by the overlapping of multiple weapons and by those nuclear effects that fall outside the target area (60% for a 440-KT warhead).

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If the forces were concentrated as they would be for fighting a conventional war, NATO would have enough retaliatory capability to destroy 45% of the Pact's manpower using only a limited terrain fire attack. This should deter the Pact from using nuclear weapons against NATO forces in such a situation since they could not count on achieving a major advantage by doing so. The table on the preceding page includes a first strike by NATO to show that the Pact also has a retaliatory capability.

In the nuclear terrain fire exchange considered above, the total area covered by each side's terrain fire attack is about 7,500 sq are km, or about 3% of the total area of West Germany. Total civilian casualties could be about five million. The use of nuclear weapons, especially terrain fire, is not attractive in such a situation. However, terrain fire would use longer range systems more effectively than discrete fire would for destroying Pact forces, and we need to consider terrain fire as well as discrete fire, to evaluate our theater nuclear deterrent.

If both the NATO and Pact forces were in a dispersed posture to reduce their vulnerability to nuclear attacks, fewer forces would be destroyed in limited terrain fire attacks, since only about 15% and 10% of the Pact and NATO manpower, respectively, might be in the first 50 km zone of the three thrusts. The Pact and NATO would, however, have additional troops along the front and to a greater depth. In a dispersed posture, we assume each side might have about 60% of its troops in the 0 to 100 km zone along the whole German front. With both forces dispersed and with unlimited terrain fire attacks using all tactical land force weapons, the results could be as shown in the next table.

Initial Forces and Capabilities a/	Capability Remaining After an Unlimited Terrain Fire Exchange
---------------------------------------	--

Men (Thousands)	
Nuclear Launchers	
Nuclear Warheads	
Lethal Area (Km ²)	

a/ Excludes tactical air, air defense, and strategic forces (Polaris and MR/IRBMs).

NATO could not cover the whole front (about 750 km) with nuclear terrain fire to as great a depth as the Pact, but NATO forces could still destroy 20% of the Pact manpower in retaliation. On the other hand, the Pact could not count on gaining an advantage by using such a dispersed

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posture because in their view NATO might attack first with nuclear weapons to pre-empt a Pact terrain fire attack and destroy about 35% of the Pact manpower (more, if the attack occurred before the Pact forces were well-dispersed). Even if the Pact believed that NATO would not strike first, they would have to consider the possibility of retaliatory U.S. attacks with strategic nuclear forces since terrain fire attacks to a depth of 80 km (destroying as much as 25% of Germany) would not necessarily be considered limited nuclear war.

The foregoing analysis suggests the following conclusions:

1. A survivable theater nuclear capability which could inflict unacceptable damage on Pact forces should deter the Pact from using tactical nuclear weapons. Terrain fire is an option to consider for retaliation to a massive Pact attack which could destroy NATO's front-line forces. Terrain fire could cause more damage to European society than limited discrete fire. However, we cannot reasonably expect a war to stay limited if thousands of nuclear weapons are used for discrete fire.

<u>System</u>	<u>Maximum Range</u>	<u>Percent of Launchers that Might Survive a Terrain Fire Attack Along the Whole Front to Various Depths</u>
Pershing		
Sergeant		
Honest John		
Tube Artillery		

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Theater Nuclear Requirements for the Center Region

We cannot plan to fight a limited nuclear war of long duration, using thousands of nuclear weapons in either discrete or terrain fire, because of the vulnerability of most of our warheads and delivery systems, the probable destruction of our support means by enemy attacks, limitations on command and control, and the great pressures to escalate the conflict. We need only enough nuclear weapons to be able to respond up to the point where continued limitation of a nuclear conflict would be very improbable. When additional discrete fire would do as much damage to European society as more effective limited terrain fire attacks, we should consider using terrain fire.

Tactical Bombs
Mace
Pershing
Sergeant
Honest John
Tube Artillery
ADMs
Air Defense
ASW Depth Bombs
Total Nuclear Warheads

Our theater nuclear capabilities are limited far more by our lack of adequate command, control, and support than by the size of our nuclear stockpile. Considering these limitations and the competing demands on our resources, we do not need to maintain such a large stockpile in Western Europe

G. Allied Support

We have committed ourselves to support certain allied units and we should continue to do so. At the same time we should reduce the number of bombs with which we support each allied squadron from about 1.1 to 1 per Unit Equipment (UE) aircraft. We cannot count on using tactical aircraft in a nuclear war except in a pre-emptive strike by NATO, and one bomb per UE aircraft is enough to cover such a possible but unlikely situation. We should continue discussions with our allies about Lance, but defer a decision on support until we know if the system works and whether we will in fact procure it. Our detailed recommendations on support ceilings and ceilings for discussion with our allies are shown in the table on page 28.

II. THEATER NUCLEAR FORCES IN ASIA

A. Role of Nuclear Weapons in Asia

We maintain nuclear forces in Asia for two broad objectives. First, we want to deter the use of nuclear weapons by the Chinese. We also wish to assure our Asian allies that we will use nuclear weapons in their defense if the Chinese attack them with nuclear weapons. Second, should deterrence fail, we want a nuclear war-fighting option to defend against a Chinese invasion. Korea presents the worst threat of a major invasion where we might have to consider using nuclear weapons. Unless the Chinese assist their allies with massive land forces, we should not have to consider using nuclear weapons against the other Asian Communist land forces. Our programmed forces can satisfy these two objectives.

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Current estimates of China's nuclear capability are shown in the next table.

	China's Nuclear Forces a/		
	FY 68	FY 72	FY 77
<u>Strategic Forces</u>			
ICBMs, MRBMs, and SLMs			
Bombers			
Nuclear Bombs and ASMs			
Air Defense Launchers			
Air Defense Warheads			
<u>General Purpose Forces</u>			
Nuclear-Capable Aircraft			
Nuclear Bombs and ASMs			
Frog Missiles			
Total Nuclear Warheads			

Now that China has some nuclear capability, we cannot use nuclear weapons without risk of retaliation. Even in a pre-emptive strike, we could not be sure of destroying all of China's nuclear capability. With just a few surviving weapons, the Chinese could destroy some of our important bases, airfields, and ports. Loss of these facilities could substantially reduce our logistic and air advantages. Thus, there are offsets to the military advantage we might gain from initiating the use of nuclear weapons. Moreover, the resulting deaths and destruction and their long-range political consequences could outweigh the advantages we might gain by using nuclear weapons. Thus, there are potentially compelling military and political reasons to avoid the use of nuclear weapons except under extreme circumstances.

The threat of a conventional Soviet invasion in Asia is small, and the Soviets' use of tactical nuclear weapons against free Asian countries is unlikely. Soviet interests in Asia are probably not important enough to risk using nuclear weapons in limited conflicts. In any case, our nuclear options against the Chinese should be adequate against the Soviets.

B. The Threat to Korea

The North Koreans have a force of about 281,000 men; the Chinese could deploy about 650,000 men into Korea by M+70. The narrow mountainous peninsula probably restricts the effective deployment of land forces (excluding coolies) to about one million (the maximum used during the Korean war), but the Chinese might allocate more troops to an invasion. China has 2.3 million men in its active land forces and about 100 million men for potential army use.

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The Chinese may also be limited by their willingness to accept casualties. In the Korean War, however, the Communists suffered about 1.5 million casualties. The peak casualty rate occurred in April-May, 1951, when they lost 250,000 men (killed, wounded, and captured) in five weeks. After that they fought for two more years and lost 400,000 more men.

We often think of the Chinese army as a large mass of men, thus as an ideal nuclear target. This concept is highly misleading because the Chinese apply the "massed human wave" tactic in a very specific way. They mass only when they find one of our weak or isolated company positions, preferably using a 4 to 1 manpower ratio. The Chinese do not need to concentrate more than a few hundred meters from the front lines since they are not dependent on mechanized equipment. Moreover, dispersing is to their advantage because it makes them less vulnerable to our artillery and air attacks. Their dispersal behind the front lines is also consistent with our experience during the Korean War. Reconnaissance pilots were often unable to identify troops on the ground, although other facts later confirmed that the troops were there.

C. Conventional Defense Against an Invasion

The Republic of Korea (ROK) land forces alone should be able to defend successfully against a North Korean attack. Even against a combined Chinese/North Korean attack, it appears that they provide a substantial deterrent and a capability for initial defense. By furnishing equipment to the ROK rear area security divisions, we could improve the manpower ratio of Chinese/North Korean forces to ROK/U.S. forces to less than 1.5 to 1 (the ratio in 1951 when we stopped a Communist offensive). Moreover, the ROK forces are more effective now than they were in the 1950s. Thus, our conventional forces may be enough to stop a combined Chinese/North Korean attack, and we should not plan on necessarily initiating the use of nuclear weapons in this contingency.

D. Nuclear Defense Against an Invasion Using Discrete Fire

If we could not hold conventionally against a Chinese/North Korean attack, we might use discrete fire with nuclear weapons against targets at depths greater than one or two km in an attempt to inflict casualties at a high rate over a few days and destroy their will to fight. Typical targets for discrete fire would be company-sized units containing an

To take away the ability of the Chinese to continue a determined invasion, we would have to consider destroying a million or more troops. To do this using discrete fire would require using 10,000 or more nuclear warheads over a period of months, not days, assuming we could locate that many worthwhile targets. Even if we could locate targets, we would still not be sure of stopping a determined invasion. Thus, we should not calculate our requirements for Korea on the assumption that we can destroy the war-fighting capability of the Chinese by using discrete nuclear fire in an extended conflict.

If we cannot hold against the Chinese conventionally, and if we cannot destroy their will to fight by causing a very high casualty rate with discrete nuclear fire, we might consider using nuclear terrain fire. However, it would be terribly destructive because the enemy forces would be widely dispersed and we would have to cover all the terrain.

Potential Communist Troop Casualties	Depth of Fire on Peninsula (Km) a/	Number of Delivered Weapons b/	Area Covered with at Least 10 Psi (Square Km) c/

[REDACTED]

- a/ Pyongyang is about 150 km north of the DMZ and the Yalu River is about 400 km north of it.
- b/ Using a mix of tactical bombs based on the current tactical bomb stockpile, excluding about 500 with the lowest yields.
- c/ The total land area of North Korea is about 120,000 square km.

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Using terrain fire to a depth of about 400 km to get the maximum number of troop casualties, we would kill most of the 12 million North Korean civilians and probably some friendly civilians as well. This would clearly be undesirable.

Instead of using terrain fire from the front lines to various depths, we could consider using it in the 50 to 150 km zone to destroy the local reserves and supplies. Our conventional forces should be able to defeat a front-line force of 200,000 to 300,000 men in such a situation.

F. Interdicting Logistics to Reduce Supply

An on-line force of about 300,000 North Koreans and Chinese might require about 1,400 tons of ammunition plus other supplies per day. With no interdiction, about 18,000 men would be needed to operate the transportation system. If we could keep all major choke points (about 100) destroyed permanently, the Chinese could overcome the obstacles with about a million coolies to hand-carry supplies around the choke points. However, we could not keep all major choke points destroyed, even with nuclear weapons.

G. Theater Nuclear Requirements for Korea

The above analysis suggests the following conclusions:

1. We cannot count on defeating a determined Chinese invasion by using nuclear weapons, and we should not plan on using them initially, though we should have concepts and contingency plans for their use. We should improve the conventional capabilities of our allies and rely on them as much as possible to stop conventional attacks.

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3. We could consider resorting to terrain fire, but only if our conventional defense failed and the Chinese did not come to terms after we had used limited nuclear discrete fire. Even then we could not be certain of stopping a determined invasion, and we might kill as many as five million North Korean civilians. If we decided to use terrain fire in Korea, we could use high-yield strategic bombs.

4. Though we may use nuclear weapons in an interdiction role, we cannot count on stopping an invasion by interdicting logistics, and we should not stockpile nuclear warheads for this purpose.

Our end-FY 68 stockpile of nuclear warheads in Korea and the stockpile we recommend for Korea in FY 70 are shown below.

	<u>FY 68-</u>	<u>Recommended for FY 70</u>
Sergeant		
Tactical Bombs, Honest John,		
and Tube Artillery		
Davy Crockett		
ADMs		
Nike Hercules		
Total Nuclear Warheads		

H. Peacetime Deployments to Korea

III. MIX OF THEATER NUCLEAR FORCES

In developing and procuring new tactical nuclear weapon systems, we should stress survivable, longer range, mobile missile systems in order to

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A. Tactical Bombs

B. Low-Yield, Tactical Air-to-Surface Missiles (ASMs)

C. 155mm Howitzers

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million more than that required to maintain the current warheads.

D. Sergeant

Subject to negotiations with the Italians, we recommend phasing out the Sergeant battalion in Italy in FY 70. We also recommend phasing out the Sergeant battalion in Korea in FY 71 for an annual savings of \$6.3 million. We do not need Sergeant in Korea for limited discrete fire, and if we decide to use terrain fire, we can rely on air-delivered weapons in Asia. Finally, we recommend retiring the Sergeant battalions in Germany and the United States (starting in FY 73) when Lance is deployed.

E. Lance and Honest John

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F. Atomic Demolition Munitions (ADMs)

ADMs are nuclear charges designed to delay an advancing army by placing obstacles in its path. While the military benefits of using ADMs can be sensitive to the timeliness of their release and we should keep a capability to use them forward of our main battle positions, the possible severe reaction to the first detonation of any nuclear device cautions against early use of ADMs except under the most extreme circumstances.

We have asked the JCS and the Services to study an ADM employment concept in which we would consider using ADMs primarily to the rear of the main defensive positions in the event we are not able to defend conventionally against a conventional attack. Under this concept, we would not plan on using ADMs between the borders of enemy territory and our own main defensive positions. In order to avoid using nuclear weapons if at all possible, we would plan to test our conventional forces in the main defensive positions before using nuclear weapons. Then, if it appeared that we were not able to defend conventionally, we would consider using ADMs (which, being defensive weapons, could be considered less escalatory than other nuclear systems) to help stop the attack. Thus, the primary region where we would consider using ADMs would be in the area from about 25 to 100 km behind our initial main defensive positions--behind the place where we could first really test our conventional defenses and in front of the region where other nuclear responses would clearly be more appropriate. This concept would not preclude the possible use of ADMs in other areas, such as along the main defensive positions rather than further to the rear, and it would be consistent with our flexible response strategy and the new strategy adopted by NATO.

IV. CHEMICAL AND BIOLOGICAL WARFARE FORCES

A. Lethal Chemicals

Lethal chemicals can kill many unprotected troops quickly. Casualties are very low against protected troops, but the combat effectiveness of troops in protective clothing is degraded.

We estimate that the Soviets have about 275,000 tons of lethal chemical agents, compared to about 35,000 tons for the United States. (The composition of the U.S. stockpile is shown in the table on page 29.) For defense, we have masks and, to prevent absorption of chemicals through the skin, some old individual protection suits and collective protection devices.

In Soviet doctrine, lethal chemicals are usually considered in conjunction with nuclear weapons. The Soviets could escalate a conventional conflict in Europe by using nuclear weapons or chemicals, or both. Our theater nuclear capability helps to deter their use of nuclear weapons. To deter the Soviets from using chemicals alone, we must be able to prevent them from gaining a significant advantage from their use. To do this we need enough defensive capability to prevent a large number of casualties and an offensive capability to force the Soviets to take protective measures.

Europe is the only area where we need a deterrent against the use of lethal chemicals. The Soviets seem intent on avoiding the use of nuclear weapons in limited conflicts in other areas and probably would also forego the use of chemicals. We have no evidence that the Chinese have a significant lethal chemical war-fighting capability. Our conventional forces provide sufficient alternatives against other countries.

For the defensive component of our lethal chemical deterrent in Europe, we need individual protection (masks and protective suits) for our land forces and forward air bases, some warning capability, and protective shelters for forward medical units. Large numbers of warning devices and protective shelters would contribute to our ability to fight a prolonged war, but would increase our deterrent very little. For the offensive component of our chemical deterrent in NATO's Center Region, we need enough chemical capability to expose unprotected front-line troops to a 10% casualty rate per day for about 10 days of intense combat (equivalent to a 20 to 90 day war, depending on usage rates).

For NATO's Center Region, the approximate additional 10-year costs for equipment and munitions (above our current inventories) to provide a lethal chemical deterrent, which would give us some war-fighting capability, are shown in the next table.

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Capability	Additional 10-Year Cost a/ (In \$ Millions)
Defensive Protection for 11 U.S. Division Forces (DFs) and 5 Forward Air Bases	\$ 400
Offensive Capability for the U.S. and Allied Sectors	140
Total Costs	\$ 540

a/ Provides individual protection for troops and a 10-day offensive capability at 750 tons per day.

We should procure the additional equipment to provide a deterrent capability for NATO's Center Region, giving priority to improvements in our defenses against lethal chemicals. We recommend against procuring a chemical capability to fight a prolonged war. Any extensive use of lethal chemicals would probably lead to a nuclear war. We will address our lethal chemical needs for other NATO regions in the coming year.

B. Incapacitating Chemicals (Including Riot Control Agents)

We might benefit from using incapacitating chemicals in situations where civilians are mingled with enemy troops and we do not have reasonable conventional alternatives. For such situations, we could benefit from improvements that would increase the duration of the effects now available with tear gas. However, we should not use incapacitants which make people irrational and unpredictable. Nor should we use presently available chemical incapacitants in ordinary combat against any enemy forces because: (1) feasible conventional alternatives are almost always available, (2) we do not want to risk enemy retaliation with lethal chemicals, and (3) we do not want to risk lowering the barriers to chemical warfare.

For the post-Vietnam Baseline Force, we should stockpile a 30-day supply of tear gas for one DF with air support and one Marine Expeditionary Force (MEF). This is enough for counterinsurgency operations. In addition, we should stockpile enough tear gas for civil disturbances. We should not increase our stockpiles of any other incapacitants until further research and development is done on improved agents.

We recommend disapproving the JCS proposal to buy a chemical incapacitating capability for all land and air forces at a 10-year cost of \$440 million (excluding costs for research, development, and operations in Vietnam).

MEMORANDUM FOR THE PRESIDENT

October 1965

SUBJECT: Theater Nuclear Forces (U)

As of 1-5-83

(A)

Sanitized Master

I. Introduction

In conjunction with my annual review of our various military forces, I have completed a concurrent review of our theater nuclear forces and their implications for U.S. defense programs. This memorandum summarizes the major issues addressed in my review and presents the basis for my recommendations concerning theater nuclear forces. The timing and appropriateness of presenting or advocating these overall policies to our Allies has not been addressed.

In particular, I recommend:

1. The U.S. continue to urge the improvement of a NATO nonnuclear capability as the primary defense against nonnuclear aggression in Europe. 1/

2. Theater nuclear capabilities be programmed to help deter USSR initiation of nuclear war, to meet nuclear attacks, and to serve as insurance against failure of NATO's nonnuclear defense. In light of the increasing Soviet theater nuclear capabilities and their substantial chemical warfare means, our prospects for overcoming any major Soviet nonnuclear advantage with nuclear means are doubtful.

2r

4. Continued reliance upon "external" U.S. forces to cover targets within the USSR which threaten Europe; disapproval of SACEUR's proposal that Medium Range Ballistic Missiles (MRBMs) be provided for this purpose. 2/

1/ The Joint Chiefs of Staff endorse the maintenance of a nonnuclear option in Europe to meet "major nonnuclear assault" (50-60 divisions within 30 days). However, they do not agree with designating either nonnuclear defense or nuclear defense as the primary defense against nonnuclear aggression in Europe and they would not associate escalation to tactical nuclear warfare only with failure of nonnuclear defense.

2/ The Joint Chiefs of Staff believe that except for deterrence of general war, reliance on external forces to achieve the desired theater defense options reduces the credibility of both the tactical nuclear and nonnuclear options and that the presence of substantial numbers of MRBMs would impress both Allies and the Soviets with SACEUR's capability to counter the full range of the threat to Western Europe.

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(b) (1)

5. Substitution of Pershing missile systems as feasible for aircraft on nuclear Quick Reaction Alert (QRA) to provide a more survivable strike capability and to release aircraft for other roles in which their inherent flexibility can be used to advantage.

In order to improve our understanding of tactical nuclear war and its requirements, I am directing study of the following areas during the coming year:

1. Command and control procedures and facilities required to permit decision makers at all levels to make informed decisions for the selective and controlled use of theater nuclear forces.

2. Action required to permit a viable transition from nonnuclear conflict to nuclear conflict on the ground.

4. Relative costs and effectiveness of various alternative theater nuclear force postures in the Far East.

5. Interaction of chemical and nuclear warfare and the deficiencies in our current defensive capabilities against chemical weapons.

The principal US and allied theater nuclear delivery capabilities are summarized in the following tables (Table I and Table II).

TABLE I

TABLE II
TACTICAL AIR AND ASW SYSTEMS

<u>FY 61</u>	<u>FY 65</u>	<u>FY 66</u>	<u>FY 67</u>	<u>FY 68</u>	<u>FY 69</u>	<u>FY 70</u>	<u>FY 71</u>
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II. Basis for the Recommendations

Our theater nuclear forces^{1/} have important relationships with our strategic nuclear forces on the one hand and our theater nonnuclear capabilities on the other hand. The relationships raise a number of major issues of crucial relevance to U.S. plans and programs. The three principal issues have to do with:

1. The role of external strategic nuclear delivery forces in the defense of Europe.
2. The role of theater nuclear forces in the defense of Europe.
3. The role of theater nuclear forces in the Far East.

I believe we understand the first issue and its implications quite well; we know a good deal about the second issue, but not enough; and we require more study of the third.

A. NATO and Warsaw Pact Forces: Size, Control and Costs.

1. Opposing Theater Nuclear Capabilities

Our theater nuclear forces face formidable and increasing Soviet theater nuclear forces, especially in Europe. Measured in terms of nuclear capable delivery systems or nuclear warheads, it is clear that although the West possesses numerical superiority in many respects, a theater nuclear war in Europe might involve large scale use of nuclear weapons by both sides,

Moreover, despite the large uncertainties about the level and allocation of Soviet theater nuclear capabilities (only the midpoints of ranges of uncertainty are shown in this memorandum ^{2/}), it appears that the Soviets have some significant superiorities too. For example, the Soviets appear to have

^{1/} The term "theater nuclear forces" is used to distinguish the forces involved from intercontinental nuclear forces and sea-based nuclear forces. Theater nuclear forces include ground force (Army and Marine Corps) and tactical air (Navy and Air Force) nuclear delivery systems and supporting forces. They also include IR/MEBMs, which cannot strike intercontinentally.

^{2/} For more detail reference should be made to the Intelligence Assumptions for Planning, NIE 11-2, NIE 11-8, NIE 11-14, and NIE 13-2.

a pronounced advantage in numbers of large yield weapons, provided by their IR/MFEM force. This apparent advantage is exaggerated in the table below by the omission of U.S. external forces which offset Soviet IR/MFEMs. I shall discuss the relation between external forces and theater nuclear forces in the next section of this memorandum.

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- 1/ Delivered by land warfare systems and naval air but excluding surface-to-air missiles.
 - 2/ Includes Atomic Demolitions.
 - 4/ The Joint Chiefs of Staff believe that the "increasing Communist capabilities should serve as a compelling reason for initiating qualitative improvements in NATO's tactical nuclear posture and for considering quantitative improvements".

The ranges of nuclear capable delivery systems are as follows:

The West holds a substantial superiority in number of aircraft at all ranges, in intercontinental missiles and in dual purpose tube artillery. The Communists, however, have a large number of medium range and intermediate range ballistic missiles, and also possess larger numbers than the West of missile launchers in the 12-800 KM range categories.

Thus, with respect to strategic weapons the comparison hangs on the relation of external forces to the theater situation (which is discussed below). With respect to shorter range weapons, the superiority of the West in artillery tube delivered weapons is matched against Communist superiority in tactical missiles. The Western superiority in howitzers could count most heavily if the use of tactical nuclear weapons were restricted to attacking targets within a narrow zone about the forward edge of the battle areas (FEBA), (although they would be unable to take the longer ranged Communist missiles under attack). If the battle were less restrained and deeper targets attacked, the advantage could swing to the longer range, higher yield Communist missiles. We consider below, in the comparison of alternative concepts for European theater nuclear forces, the force structure implications of our expectations on the degree of restraint likely to be observed.

- 1/ Assuming unrefueled low level flight in enemy territory and including only the Soviet light bombers and fighter bombers estimated to have nuclear capability (Brewer, Beagle, Fitter, and Fishbed).
- 2/ Individual missile launchers or howitzers. Excludes ADM teams.

The lethal area (within which 50 percent of exposed personnel will become prompt casualties) offers a crude indication of the magnitude of the effects of deliverable chemical stocks on both sides, 1/ ignoring delayed effects, and downwind effects. The lethal area of deliverable toxic chemicals is 7,000 square miles for the West, and 14,000 square miles for the Communists. Comparison with the lethal areas stated above for nuclear weapons suggests that inclusion of chemical weapons may offset the Western advantage in low yield weapons (below 60 kilotons). 2/

An attempt has been made to examine the interaction of chemical warfare and nuclear capabilities. 3/ It proposes that we provide adequate defensive chemical warfare capabilities but relatively small offensive chemical warfare capabilities. This appears to constitute the most reasonable allocation of resources at this time. However, further analysis of the interaction of chemical warfare and nuclear capabilities is required. Accordingly, I am requesting the Joint Chiefs of Staff to include such analysis in their continuing study of tactical nuclear warfare.

The comparison of opposing theater nuclear and chemical forces shows no decisive superiority for either side and indicates that both sides have very large weapons stocks. An unrestrained theater nuclear war in Europe would therefore leave it devastated. From the European point of view it would be indistinguishable from general war, with potential mortalities ranging from 100 to 180 million people depending upon the circumstances of initiation of the nuclear exchange. It is in the context of this threat that the role of theater nuclear weapons and the prospects for restrained theater nuclear war must be examined. In particular the notion of a nuclear war in which attacks are limited to military targets and in which there is no attempt to inflict civil damage will be considered and referred to as "tactical nuclear conflict".

- 2/ The Joint Chiefs of Staff consider that this brief analysis does not adequately address relevant military considerations involved in the employment of tactical nuclear/chemical capabilities, but no other analysis is presently available.
- 3/ ACECON-72 study by CJCS Special Studies Group, dated April 20, 1965.

2. Control of Nuclear Weapons

3. The Cost of the Approved Theater Nuclear Capabilities

- 1/ The Joint Chiefs of Staff do not believe that the isolation of nuclear attributable costs should be required in evaluation of equipment requirements and they recommend that analysis of strategy, policy, and weapons not include such costs.

B. The Role of Theater Nuclear Forces in Europe

My recommendations on theater nuclear forces are linked to my views on the relation between nuclear and nonnuclear capabilities in Europe. I have discussed the prospects for a major nonnuclear defense of Europe in my memorandum on NATO force structure. The essential point about the relation between the two kinds of capability is that, since the Communists possess large scale theater nuclear capabilities, and theater nuclear war would be two-sided, our own theater nuclear forces can not serve as an acceptable substitute for the ability to defend Europe with nonnuclear forces against a Soviet nonnuclear attack.

There are, however, various reasons for retaining a theater nuclear option in Europe. There is by no means agreement within the NATO Alliance on the various purposes or their relative importance. The different views on this subject were reviewed in last year's memorandum on the Role of Nuclear Forces in NATO strategy, and the situation has not changed significantly.

To summarize last year's discussion, the governments of our main European Allies (U.K., FRG and France) seem to believe that deterrence of almost all resort to force can be achieved by maintenance of stocks of nuclear weapons and a declaratory policy of immediate use of such weapons in response to aggression [even though the political leaders of the West would almost certainly not authorize such response to the lower levels of aggression.] The attitudes of these governments on both theater nuclear force structure and strategy reflect this position. This is also reflected in NATO's current strategic guidance 1/, which plans to use nuclear weapons very quickly in any but the most limited of military engagements with the Soviet Union. Their emphasis on this theory of deterrence also makes them skeptical about the desirability of improving Alliance nonnuclear capabilities 2/ and with respect to some of our Allies (and SACDUR also) results in pressure to increase theater nuclear capabilities.

1/ MC 14/2.

2/ Their attitude is also related to their beliefs about the feasibility of a major nonnuclear option, as I have indicated in my memorandum on NATO force structure.

I certainly accept the importance of deterrence, especially in Europe, but I cannot accept deterrence based on nuclear threats as a satisfactory substitute for the ability to take action with nonnuclear forces. Our formidable strategic and theater nuclear forces make it highly unlikely that the Soviets would, with premeditation, launch a massive attack, nuclear or conventional, at Western Europe. But our Berlin and Cuban experiences show that major confrontations with the Soviet Union can happen even without a Soviet decision to engage in all-out attack on Western Europe; and these crises also illustrate our need

to be able to take actions short of nuclear war. To have to choose between the extremes of inaction and nuclear war in a crisis would impose severe strains on the unity of the Alliance. Actual resort to nuclear weapons, even if the original intent were to use them in a highly restrained way, would entail high risks of escalation to a theater-wide nuclear war; or to general war which would destroy much of what we want to defend in Europe.

I also believe that continued emphasis on theater nuclear response as a mainstay of NATO's defense will, in the long run, strengthen the tendency for our Allies to seek independent national nuclear capabilities. Although the immediate practical decisions facing the Alliance in the past have concerned the choice of appropriate nonnuclear actions, it has appeared that influence in the affairs of the Alliance was related to operational control over nuclear weapons because of NATO's strategic concept, and the character of the discussion about it.

There is no question about the importance of nuclear weapons in protecting the security of Europe. Their importance is reflected in the large increase in nuclear weapons dispersed to Europe. This is shown in the table on the following page.

However, I believe that the principal nuclear role should be played, as it has been in the past, by the strategic nuclear forces of the United States, based outside of Europe.

Theater-based forces, nevertheless, can be useful in several ways. As a supplement to external strike forces they may add to the effectiveness of our deterrence of major Soviet aggression and our coverage of European threat targets in general war. In this role they must be compared with our external forces in terms of cost and effectiveness. Our theater-based nuclear weapons also serve as insurance against a major failure in the nonnuclear defense of Europe by denying the Warsaw Pact the prospect of a meaningful victory in such a case. It must also be observed that the presence of substantial nuclear forces in Europe is taken by our Allies as additional evidence of the strength and firmness of our commitment to the defense of Europe.

With these functions in mind I shall proceed to consider several alternative force structure objectives for our theater based nuclear forces.

C. Alternative Concepts for Central Europe

As a basis for my recommendations on theater nuclear forces for Europe, I have considered five alternative concepts as force structure objectives. They will be discussed under the following headings:

1. Theater Increment for General War (No tactical Nuclear Option)
2. The Tactical Nuclear Engagement
3. The Short Tactical Nuclear Battle (Day or So)
4. The Tactical Nuclear Campaign (Two - Three Weeks)
5. The Extended Tactical Nuclear War (Two - Four Months)

The alternatives vary with respect to the kinds and numbers of nuclear weapons systems needed, the duration of the nuclear war they are expected to fight, and the geographic or other constraints under which the war is expected to be fought. The force structure, effectiveness, and cost implications will be considered, in turn, for each of the concepts. The forces for each concept include those of the preceding one in the listing above, plus an increment. The requirements under each concept will finally be compared with the approved program for theater nuclear forces for Central Europe, FY 1966 to FY 1970.

1. The Increment for General War

Under this concept, ACE nuclear requirements are primarily oriented toward making a contribution to general war capabilities. No tactical nuclear capability is specifically provided.

The role of Allied Command Europe (ACE) in general war would include making a contribution to the strategic nuclear exchange, and preventing, so far as possible, Warsaw Pact ground forces from overrunning Western Europe. To perform these tasks, ACE requires:

1. Coverage of counter-European threat targets, including SACEUR's Scheduled Program.
2. Some nuclear delivery means with which to attempt to block enemy ground forces.
3. Adequate means for judging quickly the military situation in ACE, to provide higher authority with the necessary information upon which to base the decision to go to general war.

The determination of ACE force and support requirements implied by the above must be made on the assumption that external forces would execute the SIOP in general war. It is necessary to consider, therefore,

the extent to which the approved external forces will satisfy ACE requirements in the future, and to judge ACE requirements for MRBM's and shorter range nuclear strike forces in the light of that analysis.

I have examined the contribution of programmed U.S. external forces to the attack of time-sensitive targets in 1972. This is the earliest date at which we could field substantial numbers of MRBMs in ACE. The table on the following page shows the expected numbers of surviving re-entry vehicles that could be assigned to time-sensitive military targets threatening Europe and the U.S., and the resulting damage expectancies. As in JSOF-70, less urgent military targets are covered by aircraft or air to surface missiles.

DAMAGE EXPECTANCIES BY EXTERNAL MISSILE FORCES, 1972^{1/}
(Retaliation After Surprise Soviet Counter-Military Attack)

The calculation shows that systems presently approved for our strategic forces or currently in development will be able to achieve very high expected damage against a time-urgent target list of the sort that appears likely for the 1970's. In particular, the introduction of multiple independently targetable re-entry vehicles (MIRV), Poseidon, and TAPS can greatly increase the capabilities of our missile forces. This case assumes that we respond after an attack in which the USSR programs 600 ICBM's against U.S. military targets, including more than 400 against our ICBM force. It is questionable that we would require a high damage expectancy against enemy hard ICBM launchers after we have sustained an

^{1/} Operational factors (Soviet and U.S.) are from JSOP-70.

^{2/} The target list is from JSOP-70 for 1974 with an additional fourteen Hard ICBM's singly dispersed. This increment reflects recent revisions to the estimated Soviet Hard ICBM forces.

attack involving the expenditure of most or all of the missiles at the sites. The possibility of more formidable Soviet threats in the 1970's and their implications for our strategic offensive forces is discussed in my memorandum on Strategic Offensive and Defensive Forces.

It is argued that the MRBM will complicate the enemy's targeting problem and will be able to strike the targets threatening Europe more rapidly than external forces. However, the external forces already complicate the enemy's problem sufficiently, and the Polaris and Minuteman systems could probably destroy the threat to Europe faster than MRBMs, considering realistically ACE's command-control problems and communication delays. Moreover, accuracy improvements in our external forces expected in the early 1970's will make them much more adaptable to SACEUR's constraints policy.

It is also argued that MRBMs under SACEUR's command will give our European Allies greater confidence than they now have in the credibility of NATO's strategic deterrent. The premises underlying this claim appear to be that some portion of the strategic deterrent must actually be on European soil in order to be credible, and that our Allies will believe that the United States would be inclined to release theater nuclear forces more quickly than external strategic nuclear forces if CONUS and the Soviet heartland had not yet been attacked. 4/ I reject both premises and I doubt that our Allies set sufficient store in them to persuade their governments

The level of steady state peacetime QRA force should be kept in balance with the rest of the ACE posture. If the USSR attacked ACE ground forces before they deployed from their casernes, the remaining ACE ground forces would be capable only of weak and desultory opposition to the advance of Communist ground forces. Even if ACE QRA forces succeeded in destroying every one of their targets (virtually all of which are airfields) the relatively unscathed Communist ground armies would remain free to overrun Western Europe. Thus, under conditions of surprise attack Communist prospects would be little affected by the magnitude of ACE's QRA force. On the other hand, once ACE ground forces were alerted and deployed out of their barracks into a less vulnerable posture, enemy prospects for destroying ACE ground defenses by massive missile attack would be reduced and enemy ground forces attempting to overrun Europe would have to bank heavily on air support, which could be largely destroyed by a suitable QRA force. In this instance the QRA force could contribute vitally to ACE's warfighting capabilities. Accordingly, I conclude that although it is essential to provide an adequate QRA force during periods of tension or conflict when ACE ground forces become more survivable through deployment to the field, the size of the QRA force in normal peacetime is not nearly so crucial.

1/ Pending completion of their review of a QRA Pershing field test and Weapons Systems Evaluation Group study on QRA Pershing, the Joint Chiefs of Staff consider it premature to reach conclusions on QRA Pershing. However, with expected improvements Pershing appears to be so much better suited to the QRA task than tactical aircraft that I consider the central thrust of my conclusions to be valid. Of course, they can be revised as more information becomes available.

d. Situation Reporting

The provision of information to decision makers during a crisis, a nonnuclear war, or a limited nuclear conflict is a critically important function because of the risks of escalation inherent in major confrontations.

- 1/ Although our target acquisition may not pinpoint enough targets for effective discrete fire, it does not appear that future developments in airborne side-looking and moving-target-indicator radar, signal intelligence and other means may provide a good assurance of knowing if the enemy attempts to disperse suddenly.

2. The Tactical Nuclear Engagement

Under the preceding concept, ACE would, of course, have sufficient firepower for a demonstration of its resolve to use nuclear weapons rather than suffer defeat in an overwhelming nonnuclear attack. Proponents of nuclear demonstration, however, have stressed tactical use of nuclear weapons, to avoid both the great civilian damage from high yield weapons, and the impression that we have initiated general war. The force structure for the preceding concept includes no low yield weapons.

3. The Short Tactical Nuclear Battle

This concept aims at the ability to fight a two-sided, but short and limited nuclear war, initiated by NATO as the result of an overwhelming Soviet nonnuclear attack, or a nuclear attack by the Soviets to defeat a successful NATO nonnuclear defense. Depending on the deployment of the ground forces on both sides at the initiation of tactical nuclear war, and the intensity of the initial attacks, casualties at the end of the initial one to three day period may be high enough to produce a stalemate, even if only low yield tactical nuclear weapons are employed. Under such condition

1/ ACECON-72, CJCS Special Study Group.

2/ Such demonstration might be similar to the initial stages of the nuclear conflict scenarios depicted in Army Project Id, which was published in July 1964.

a pause might be enforced while reserves moved up to the front to resume the battle, which would subsequently be fought from a dispersed posture to minimize casualties. Even against dispersed troops on or near the front, the use of high yield weapons in blanketing attacks might continue to produce high casualties. The possibility of such use with the attendant collateral damage and incentives to further escalation, would be a destabilizing influence in tactical nuclear war.

If the concept worked as intended, it would provide a capability to force at least a pause in a nuclear or nonnuclear attack, without the heavy civilian damage characteristic of less restrained nuclear conflict. However, deficiencies in target acquisition make it difficult to rely on low yield nuclear weapons. In heavy air defense environments we will have poor target acquisition ability beyond line of sight from the front lines.^{2/} Commanders in tactical nuclear war will therefore feel strongly impelled to resort to terrain fire with large yield weapons in place of discrete, aimed fire with low yield weapons. The lack of good target information may also tend to increase the level of violence once tactical nuclear war has begun. New reconnaissance systems may offer improvements in target acquisition capability, but they will have to be evaluated in terms of their cost and effectiveness in both nuclear and nonnuclear environments.

4. The Tactical Nuclear Campaign

This concept aims to provide enough tactical nuclear capability to fight for two or three weeks, assuming that ACE ground forces succeed in dispersing sufficiently to hold their casualties to levels permitting the conduct of a coherent campaign and that the conflict does not escalate to general war. As discussed in greater detail in Annex B, it is uncertain that these are valid assumptions.

The time limit for this concept is set by the availability of supplies in forward dispersal stocks, since the enemy could target our lines of

^{1/} This estimate is based upon Project 23, and the TAC NUC-65 war games in which about 200 and 260 warheads were employed per corps.

^{2/} The TAC NUC-65 report states that only ten to fifteen percent of potential targets are likely to be detected in good visibility, and only a third of these recognized as to type of target.

communication in the communication zone if it became apparent that further operations would be critically dependent upon logistics support and manpower reserves. This vulnerability constitutes an incentive to escalation. To remedy it would involve dispersing rear stocks to numerous small depots, and providing appropriate and survivable communications to control their distribution. This would imply major increases in personnel, equipment, real estate and construction in ACE, that are not included under this concept.

Under this concept ACE is to achieve a capability to fight nuclear war at the tactical level for two or three weeks, (perhaps longer if the enemy is deterred from striking ACE logistics depots). If we managed the transition to nuclear war better than the enemy, this concept could enable ACE to defeat the enemy without having to escalate higher, but there are several major uncertainties.

It is not certain that ACE can effect a suitable transition. Civilian casualties may also be large because of the movement of the battlelines during the campaign and the incentives to strike deep targets co-located with cities. If the enemy does attack logistics depots, as he may well do in an engagement of this length, it is doubtful that the conflict can remain limited to the tactical level.

5. The Extended Tactical Nuclear War

Under this concept we would prepare for tactical nuclear war that might continue at varying degrees of intensity for as long as three or four months with casualties in the first month amounting to some 20 to 40 percent of initial troop strength. 2/ To fight that long it would be necessary to provide extensive logistics facilities able to survive in a nuclear war.

A capability to conduct such an extended war would therefore require a major increase in tactical capabilities over current programs. (One study suggests a requirement for over 20,000 nuclear warheads 1/.)

This concept represents a much greater increase in cost than do the previous ones. It is subject to the same uncertainties as the Tactical Nuclear Campaign concept, but more so. In particular, considering the escalatory pressures that seem likely to build up over time, it appears highly questionable that nuclear conflict could remain constrained at the tactical level for the period of time assumed.

6. Conclusion

The table on the following page summarizes the cost of current U.S. theater nuclear programs in support of Central Europe and the costs of the five alternative postures.

1/ As postulated in the Army Project Oregon Trail report of February 1965.

The greatest difference is between the concept for Extended War and the others. The currently approved program is approximately the same as the Tactical Nuclear Campaign concept in terms of the weapons and delivery systems provided. The principal difference between them is the additional expenditure for improved situation reporting, which is desirable under all concepts.

I am unconvinced of our ability to make the transition from nonnuclear to tactical nuclear war without unduly prejudicing our ability to hold in a nonnuclear defense. Another problem in tactical nuclear war is that as the battle lengthens, the incentives to disregard constraints on weapon yields, depth of strike and permissible collateral damage will be strengthened by unsolved problems of target acquisition, movement of the front, and the growing importance of targets in the communications zone.

3. We now have in approved programs for ACE, adequate nuclear weapons and delivery systems for the concepts up to and including the tactical nuclear campaign, with the possible exception of high yield weapons to be employed against ground force targets in general war. I am asking the Chief of Staff, Army, to study the need for such weapons in conjunction with a broader study of the transition from nonnuclear war to nuclear war.

4. I reject the concept of the Extended Tactical Nuclear War as a basis for force structure planning because of its high cost, dubious feasibility, and its very high probability of terminating in general war.

5. I believe that currently approved programs give us a capability to implement at least the Short Tactical Nuclear Battle Concept. Designing our forces to meet this objective permits us to continue to deter Soviet use of tactical nuclear weapons during nonnuclear conflict, to engage in a demonstrative use of tactical nuclear weapons, to fight a short tactical nuclear engaged battle, and to perform theater tasks in general war.

6. Although I approve, in principle, the provision of finely graded options between low level conflict and unrestrained general war, our understanding of tactical nuclear war is insufficient to determine whether or not the Tactical Nuclear Campaign Concept should be established as a force structure objective. I have noted that approved programs approximate in size and composition the estimated requirements for this concept and recommend that they be continued but that no additional requirements be approved on the basis of achieving a capability for the Tactical Nuclear Campaign concept pending resolution of the present uncertainties regarding its feasibility, its desirability, and its weapon and support requirements. Specifically I see no basis for increasing the number of nuclear weapons in Europe beyond currently approved levels. 2/ 3/

7. All of the alternatives considered would benefit from improved situation reporting. I am asking the JCS to consider the suggestions presented in ACECON-72 and to propose suitable improvements in our capabilities.

D. Theater Nuclear Warfare in the Far East

While we understand only imperfectly the implications of tactical nuclear conflict in Europe, we know less about such implications in the Far East. In part, this is because we have focused our tactical nuclear studies to date primarily on Europe.

Since too little is known about our nuclear requirements in the Far East to draw concrete conclusions at this time, the following paragraphs are devoted to sketching problems that are already evident and to raising questions that we will seek to answer in the coming months.

We face two essentially different threats in the Far East: The Soviet and the Chinese Communist. The nuclear armed USSR ground forces could strike strongly into Korea but hardly anywhere else for lack of transport. However, the Soviet IREMs can reach out a good distance and their aircraft could deploy into China or North Vietnam. The following table illustrates what could be the opposing US/USSR nuclear capabilities in this region by M+30. Of course, both sides can reinforce these means with their inter-continental delivery forces. In fact, a number of targets in this region are covered by the Strategic Air Command.

OPPOSING US/USSR NUCLEAR CAPABILITIES IN THE FAR EAST, M+30/

CINCPAC		USSR	
<u>1965</u>	<u>1970</u>	<u>1965</u>	<u>1970</u>

The U.S. clearly has the predominance in mass-casualty-producing means. In fact, the U.S. superiority is so great as to raise questions concerning whether our warhead deployments in this area are excessive. These questions become stronger when consideration is given to how weak the Communist air and missile defenses in the area are. The U.S. predominance, together with the strong defense in South Korea, should strongly inhibit Soviet initiation of aggression in this area.

The Chinese Communists pose a different sort of problem. Having recently exploded two nuclear devices, they may already have achieved a marginal nuclear capability. It is estimated that within the next two years their capability could consist of at least a few fission bombs deliverable by the two Beagle and a dozen or so Full bombers on hand. Assuming an all out effort to achieve a large stockpile, the Chinese Communists might possibly have by 1970 a few hundred weapons. Many of these may be small enough to be delivered by their inventory of some 290 Beagle light bombers, by their version of the Soviet thousand mile MRBM (which may be ready for deployment in 1967 or 1968) and by their short range (100-300 mile) submarine launched missiles. Although a small thermo-nuclear capability may be achieved by 1970, the stockpile seems likely to have only fission weapons (up to 200 KT) until 1970. Based upon the scant information available, the following table illustrates what the Chinese Communist nuclear posture may look like in 1965 and 1970 in terms of delivery capabilities for nuclear weapons of types that the Chinese Communists may develop by these dates.

ILLUSTRATIVE CHINESE COMMUNIST NUCLEAR CAPABILITIES

The advent of a Chinese Communist nuclear capability can have serious repercussions throughout the Far East. Under nuclear blackmail, neighboring countries may become more prone to accommodate to Chinese Communist wishes and less likely to call on the U.S. for support.

In the event that a major Chinese Communist aggression in Southeast Asia indicates that the U.S. might have to face a decision to use nuclear weapons, it is clear that the decision could be taken more deliberately than a similar decision against the Soviet Union in Europe. The terrain in many areas of the Far East would slow the pace of a Chinese attack, particularly in the monsoon half of the year, when the rain soaked road net can carry only a third as many forces as when dry. During the dry season U.S. and Allied aircraft can cover the road net, largely unimpeded by weather, reducing traffic sharply at that time too. In fact, while recognizing the demonstrated capability of the Chinese Communist Army to move without dependence upon existing road nets, I consider it questionable whether the approaches into Southeast Asia would permit the Chinese Communist to intervene massively enough in Vietnam or Thailand to overwhelm our conventional capabilities.

Although choke points in the limited road net in this region would be good nuclear targets, there are not many other attractive nuclear targets in the area. Considering the vulnerability of our relatively few airbases in the region, we might well be giving up our superiority in nonnuclear air power if we escalated the war by striking the air fields of an enemy who had even a few nuclear weapons, unless we achieve virtually complete effectiveness in our initial strikes. Furthermore, the forested terrain in Southeast Asia and the enemy propensity for light equipment, dispersion, infiltration, camouflage and night movement could reduce considerably the advantages normally expected in employing nuclear weapons against ground forces.

In the long run, there is a danger that nuclear developments in the Far East may follow the pattern experienced in Europe about a decade earlier. Immediately after the end of World War II the U.S. protected Europe with atomic bombs, much as it later sought to protect Asia with its massive retaliation pronouncement of 1954. Today there are proposals that we must rely on tactical nuclear weapons to handle the "massive Chinese Army" in a manner reminiscent of that envisaged when the Soviets acquired a counter-vailing strategic nuclear capability and we deployed tactical nuclear weapons to defend Europe against the "massive Soviet Army". Many of our problems in Europe today are a result of having oversold a nuclear defense. In order to gain a better basis for decisions concerning what nuclear capabilities to provide in the Far East, I am asking the Joint Chiefs of Staff to evaluate the relative costs and effectiveness of various alternative theater nuclear force postures in the Far East.

III: Program Implications

Our studies have not progressed to the point of developing the detailed, time phased, and costed program needed to meet essential requirements. In its absence I shall express my current views about specific proposals.

I. Nuclear Delivery Systems

2. Nuclear Stockpiles

Any effort to compute stockpile requirements for tactical nuclear warfare is beset by a number of uncertainties. Nevertheless, as discussed above, current programs in support of Europe appear to provide sufficient weapons to conduct as long a tactical nuclear campaign as seems feasible in that region under current circumstances. And subject to further study on

1/ Capable of firing both nonnuclear and nuclear warheads.

the Far East, there appears to be more than enough weapons for that region as well. Thus, the size of our stockpile does not, at this time, appear to limit our tactical nuclear capabilities.

The availability of nuclear materials has increased to the point where it no longer constitutes the governing constraint on the size of the theater nuclear stockpile. (A decision to undertake a substantial anti-ballistic missile program could change this.) The major constraint now appears to be the cost of delivery systems and of warhead fabrication, particularly the latter, since most theater nuclear delivery systems have already been bought and the costs of projected changes which should be attributed primarily to nuclear delivery capabilities are relatively small. In this regard the fabrication costs of tactical nuclear warheads previously scheduled for production during the next six years were as follows:

NUCLEAR WARHEAD PRODUCTION¹/

The U.S. clearly has the predominance in mass-casualty-producing means. In fact, the U.S. superiority is so great as to raise questions concerning whether our warhead deployments in this area are excessive. These questions become stronger when consideration is given to how weak the Communist air and missile defenses in the area are. The U.S. predominance, together with

Perhaps the most serious deficiency of all concerns the time it takes to transmit information on the tactical situation to decision makers. There has been inadequate improvement over World War II and Korea. It takes many hours to transmit the front line status back to theater level. For example, CINCEUR advises 1/ that in exercises last fall his information on the ground situation arrived up to 36 hours after the event. Apparently too much information is being passed, too much time is consumed in processing at each echelon of command, and the means to expedite and display the essential information are inadequate. Once the necessary procedures have been determined and established, success will depend upon the adequacy of communications.

Much has been said about the vulnerability of our overseas communications systems in a general nuclear war. When these systems are examined in the context of the more restrained environment of nonnuclear and tactical nuclear war, the situation is somewhat less severe though much remains to be done. It can be expected that within two weeks of the outset of a nonnuclear war the intensive attacks directed against military targets might, as a by product, greatly reduce communications between our major headquarters via the fixed military tropospheric scatter and microwave links and the civil landline networks. The same might be true in the event of escalation to nuclear conflict confined to the engaged battle zone. In these cases communications between high level commands should remain marginally adequate and then improve somewhat as corrective measures are instituted and initial intensity of air attacks subsides. If the enemy made selective nuclear attacks against the communications systems in Europe with the idea of destroying NATO's ability to decide upon and launch Quick Reaction Alert (QRA) forces, most high level communications might collapse. However, SACEUR's airborne command post and other back-up modes that are being programmed, such as satellite communications, are designed to thwart such an attempt (though they would leave us with greatly reduced communications capacity).

Given adequate mobility, higher level reserve forces in nonnuclear conflict may be able to remain dispersed sufficiently to survive and counter enemy initiation. Careful preparation and training in rapid dispersal at the onset of nuclear conflict should also enhance survivability. 1/ An additional approach is the deployment of a highly survivable capability to retaliate and inflict major casualties on the enemy ground forces through the use of high yield nuclear weapons employed on a terrain fire basis, if necessary. Such a capability has been discussed in the section on the General War Increment, above.

Accordingly, I am asking the Army Chief of Staff to study the problem of effecting a viable transition from nonnuclear conflict to nuclear conflict on the ground without prejudicing our nonnuclear defense. This will include investigation of how the distribution of civilians in the battle area should affect the yields employed and of the effectiveness of high yield terrain fire in countering enemy nuclear preemption against our ground forces massed for nonnuclear conflict. The effect of concurrent employment of chemical warfare will also be considered.

It is quite apparent that with the problems of nuclear escalation, decision makers on each side will be strongly influenced by the quality of their machinery for situation reporting. If the decision makers find that they are receiving information late and in incomplete form, they may feel compelled to rely on hunch or intuition. Recognizing the danger of waiting too long to release nuclear weapons, they may possibly accede to the request of a local commander for release in situations which, if fully known, would not warrant release--or they may release too late. In the midst of many disconnected reports of enemy nuclear strikes, they may inadvertently overestimate the extent of the strikes and over-react. Uncertain over the point of launch of certain large enemy strikes, they may miscalculate enemy intentions and initiate responses that might lead us irretrievably down the path to general nuclear war.

On balance, I find that our situation reporting system constitutes a serious weakness in our ability to prosecute tactical nuclear war. Unless major procedural changes are made to filter available information and get the most important data to decision makers with high precedence, the decision makers might find themselves virtually devoid of the critical information needed for decisions. Accordingly, priority must be given to studying this problem and applying the resources necessary to achieve proper balance with other tactical nuclear war-fighting capabilities. To this end, I am requesting the Joint Chiefs of Staff to undertake a special study to determine what procedures and facilities are required to keep decision makers at all levels sufficiently informed of crucial events so that they are as ready as possible to make any nuclear decisions which may be required. This will include specific inquiry concerning the minimum essential information required by decision makers, to include the front line situation, status of nuclear delivery forces, location of enemy nuclear strikes, and country of launch of enemy missiles.

ANNEX E

TRANSITION TO NUCLEAR CONFLICT IN THE ENGAGED BATTLE

The use of nuclear weapons would have two major effects on the battlefield relative to conventional weapons. First, it would increase greatly the casualty rates of engaged forces unless they disperse to much thinner troop densities. Second, it would provide for the first time opportunities to inflict substantial casualties on mobile enemy forces well back from the front, despite the anticipated paucity of detailed target acquisition beyond a few kilometers from the line of contact. Studies suggest that during the transition from nonnuclear conflict to nuclear conflict these two effects create vulnerabilities that may prove decisive unless special safeguards are found to counter enemy attempts to take advantage of them. These vulnerabilities and means which have been suggested to counter them are covered in the following paragraphs.

For illustrative purposes the engaged battle nuclear capabilities likely to confront each other by M+30 in the Central Region of Europe are listed below. 1/

ENGAGED BATTLE NUCLEAR CAPABILITIES, CENTRAL EUROPE, M+30 2/

In all cases the percentages of casualties in relation to the duration of the games strongly suggests that forces of this type kill each other off very quickly. Unless the war terminates as a result, the prospect is that the battlefield will be left in possession of the side that can get reinforcements there first. (This is the situation envisaged in the Short Tactical Nuclear Battle alternative.)

The appropriate way to reduce the level of casualties on the nuclear battle appears to lie in thinning out the density of troops on the battlefield. This was attempted in Game III of the Tactical Nuclear 65 study by dispersing defending NATO divisions to a "nuclear scared" posture, occupying about two and a half times as much area as conventional formations, i.e., frontage of about 50 kilometers and depth of about 50 kilometers. When yields of up to 35 kilotons were employed, the engaged divisions sustained losses of about six percent per day in tactical nuclear conflict and ACE suffered about 20 percent casualties overall in a 13 day campaign that succeeded in containing the enemy along the forward defense line in Central Europe. (This is the situation envisaged in the Tactical Nuclear Campaign alternative.) Considering

1/ Project 23 by CJCS Special Studies Group, April 1963; Tactical Nuclear 65 by CJCS Special Studies Group, July 1964; Project Oregon Trail by CDC, U.S. Army, February 1965.

that casualty rates in the major battles of the Napoleonic and Civil Wars were over 22 percent and that rates in intensive combat in World Wars I and II came to about 20 percent casualties per day (e.g., the Meuse Argonne Offensive and certain actions in Battle for Normandy), the casualty rates estimated for the Tactical Nuclear-65 game may not be prohibitive.

Unfortunately ground divisions deployed in a dispersed posture lack the concentration necessary for conducting a sturdy nonnuclear defense against strong enemy nonnuclear attack. Dispersed too widely to attain the mutual support and massed firepower necessary for nonnuclear defense, they are subject to penetration and forced withdrawal. As a result there is a requirement that troops engaged in nonnuclear combat assume dispositions of adequate troop density. Thus there is a need for markedly different postures in nonnuclear and nuclear conflict. This creates major problems in effecting transition from nonnuclear conflict to nuclear conflict, problems which differ according to which side initiates the use of nuclear weapons.

On the other hand, if the enemy initiates nuclear strikes during a nonnuclear conflict, our combat elements massed for nonnuclear defense could suffer the high levels of casualties listed above for conventional deployments unless they succeed in dispersing before being struck. If the enemy employs relatively large yield weapons to blanket the general areas occupied by our ground forces, few of our troops would be left to fight.

This is the nub of the nuclear transition problem at the engaged battle level. Unfortunately it probably cannot be solved by hardening as in the strategic nuclear war case, nor by concealment as in the deep nuclear strike case. During nonnuclear conflict the engaged battle forces are too exposed and too close together to hide successfully and they would run serious risks if they spread out too much.

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Record of Decision

DRAFT

MEMORANDUM FOR THE PRESIDENT

SUBJECT: Theater Nuclear Forces (U)

My continuing investigation of the role of theater nuclear forces has led me to the following major conclusions:

1. Nuclear weapons are not a substitute for nonnuclear capabilities. The growth of Soviet nuclear forces has reached the point where NATO must anticipate extreme damage in a large scale nuclear war. As a result we can no longer be confident that a theater nuclear posture without strong conventional forces will continue to deter Soviet nonnuclear aggression. 1/

2. Nuclear weapons are a necessary complement to nonnuclear forces. They contribute to the deterrence of Soviet attack with tactical nuclear weapons; they will permit us to respond in kind if such weapons are used; they can be used to support our forces if we fail to contain a large scale nonnuclear aggression; they contribute to deterring or fighting general war. 2/

4. Deficiencies in our posture reinforce the incentives to escalate that are inherent in nuclear warfare. Major improvements at acceptable costs can be made with regard to the vulnerability of our strike forces, situation reporting, doctrine for transition from nonnuclear to tactical nuclear conflict, and battlefield intelligence.

- 1/ The Joint Chiefs of Staff (JCS) would give a somewhat larger role to theater nuclear forces in the deterrence of nonnuclear aggression.
- 2/ The JCS would add that selective application of nuclear weapons could cause de-escalation or termination of conflict.
- 3/ Ascribing a larger role to theater nuclear forces in general war, the JCS would not focus their design primarily on limited nuclear conflict.

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Table I summarizes recommended theater nuclear forces. In particular, I recommend that we:

7. Defer JCS recommended increases in fixed plant communications to nuclear weapons storage sites and units in Europe. Increase reliance on the existing, more survivable and less expensive mobile communications facilities for control of nuclear weapons. Resultant savings in investment and operating costs are \$32 million through FY 1972.

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U.S. Theater Nuclear Warheads in Support of
U.S. and Allied Forces/B
(End Fiscal Year)

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I. ROLE OF THEATER NUCLEAR FORCES

The USSR is now approaching parity with the U.S. in theater nuclear weapons (see Annex A page 22) and it appears unlikely that either side can gain sufficient advantage to upset this parity. This development threatens higher damage in the event of nuclear war, compounds the difficulties of constraining conflict, and effectively rules out meaningful military victory. Nevertheless, theater nuclear forces have several important functions.

Deterrence of Aggression. The Soviets might fear that tactical nuclear weapons would bridge the gap between large scale nonnuclear war and general war, and this fear might help to deter them from extreme acts of aggression in Europe or to inhibit escalation by them in war. However since nuclear war would be catastrophic to both sides, Soviet leaders might doubt NATO's resolve to initiate the use of nuclear weapons against limited nonnuclear aggression or to resist such aggression at all if a nuclear response were the only NATO option available.

The major role for theater nuclear forces is to deter nuclear attacks in Europe. A Soviet decision maker considering the initiation of nuclear war in Europe would have to assume U.S. willingness to respond in kind.

General War. Our theater nuclear forces also contribute to deterring or fighting a general nuclear war and to denying the Soviets any prospect, however remote, of overrunning Europe in the course of a general war and capturing Western European productive capacity intact. The contribution of theater nuclear forces to deterring or fighting a general war is small however, relative to that of our strategic forces. The size and characteristics of our theater nuclear forces should not, therefore, be determined by the requirements of general war; their general war capabilities should rather be treated as a bonus.

Tactical Nuclear Option. The principal question about limited nuclear war is whether it will escalate to general nuclear war. Once the "fire-break" between nonnuclear and nuclear war is breached with the first nuclear

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weapon, escalatory pressures will rise. Opposing commanders will have strong military incentives to strike opposing nuclear strike forces before they are launched, to attack land forces still concentrated for nonnuclear conflict, to compensate for target acquisition difficulties by directing large yield weapons at likely targets, and to hit logistics concentrations in the rear, rapidly increasing damage to population and industry as the battle proceeds.

The mounting damage as nuclear war grows more violent provides the chief incentive for restraint in nuclear war. The figures in the table below illustrate the increase in civil damage as nuclear war mounts in violence through various hypothetically restrained levels of conflict. The table excludes strategic attacks on targets that are collocated with cities, or attacks on urban targets themselves that could result in European fatalities of 200 million.

CIVILIAN CASUALTIES IN CONSTRAINED NUCLEAR CONFLICT IN EUROPE
(Avoiding Attacks on Towns)

There are a number of additional motives for restraint. Neither side can foresee a clear advantage from escalation to override the many uncertainties in this untried kind of warfare. Nor could "military victory", if achieved, compensate for the casualties that even the initiator would sustain among troops and civilians alike in unlimited nuclear war. The initiator's armed forces, no less than his opponent's, could be destroyed - possibly to the point where he would lose control of even his own territory. Regardless of the initial objectives then, each side would want to avoid general war. It is desirable, therefore, that we be able to recognize enemy restraint if it occurs and be able to fight with restraint ourselves.

In sum, it is impossible to predict with confidence the course of a limited nuclear war. The danger of escalation, once the "firebreak" between nonnuclear and nuclear war has been crossed, and the damage, if escalation occurs, caution against relying on our ability to limit nuclear war and against investing large resources in nuclear capabilities that are important only if the war does remain limited. Our posture and doctrine should be designed, where possible without large sacrifices in resources, to reduce incentives for enemy escalation and to provide inducements for him to observe restraint.

Incomplete Intelligence. The Soviets' combat doctrine suggests that they neither expect nor plan on restraint in using nuclear weapons. The Soviets nevertheless maintain at considerable cost a force which is inherently strong in conventional as well as tactical nuclear capabilities. This suggests that whatever Soviet doctrine and strategy are, their forces still provide them with both nonnuclear and nuclear options that continue to complicate our planning, which is already taxed with broad uncertainties concerning the size and yields of Soviet tactical nuclear stockpiles.

Inadequate Situation Reporting Machinery. Long time lags - often many hours in duration - occur before decision makers at theater levels learn of the full combat situation at the front. Inaccuracies in reporting enemy nuclear strikes compound the problem. As a result decision makers may wait too long in releasing nuclear weapons or make a hasty decision in favor of employing nuclear weapons in circumstances which would be more suitably handled without them if the situation were better known. We should be able to improve our reporting machinery substantially.

Vulnerable Nuclear Strike Forces. Our overseas nuclear strike forces consist mainly of tactical aircraft based on easily targeted airfields within range of Soviet IR/MRBMs forces which are so numerous as to render additional dispersal of SACEUR strike aircraft an insufficient remedy for their vulnerability. Prior to the Soviet IR/MRBM force buildup, these aircraft played a major role in SIOP planning because of the timeliness of their strikes as compared to those of intercontinental bombers. However, in view of their current vulnerability to IR/MRBMs these aircraft can no longer be depended upon for crucial SIOP tasks. We must now begin to rely more upon our growing mobile Pershing missile forces which would be much less vulnerable after they deployed from their peacetime stations and began moving randomly among previously unoccupied sites in periods of strategic warning. Their lower vulnerability should enhance the stability of the deterrent at the theater level in crisis.

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In sum, the unresolved difficulties noted above suggest that we cannot rely with high confidence on nuclear weapons to achieve the traditional military objectives: defense of friendly population, territory, and wealth, and preservation of friendly military forces, while destroying enemy forces to such an extent that we can enforce our political will - though those would, of course, remain our objectives if nuclear war did occur. Nevertheless, as long as we retain our current level of theater nuclear capability and continue to improve it at the level of effort currently programmed, we should be able to deny the enemy confidence in achieving such success against us.

1/ The JCS consider that the necessary logistics are not too costly.

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Taking account of the reduced requirement for air delivered nuclear weapons, the Army study results are consistent with my conclusion last year that the number of nuclear weapons already provided for Europe is

adequate. This was also the judgment of the Nuclear Planning Working Group, NATO Special Committee of Defense Ministers at its April, 1966 meeting: "Tactical nuclear weapons available to SACEUR and SACLANT under present conditions appear to be sufficient in quantity."

Accordingly, I see no change in circumstances to warrant an increase in the number of weapons dispersed to Europe. ^{1/} Modernization and improvements involving new allied delivery units can be accomplished by redistribution within the total approved by NSAM 334. Considering our capability for rapid world-wide nuclear weapons redistribution, the stockpile held in CONUS seems appropriate for most likely contingencies.

Should it be necessary to meet overt Chinese conventional aggression with the use of nuclear weapons, our capacity to do so is not in question, provided the Soviets do not intervene. The expected increases in Chinese nuclear capability over the next 10 years and longer will not change this assessment. There are, however, major constraints on the use of nuclear weapons in Asia as well as in Europe which suggest that we could not count on the use of such weapons except perhaps to deter or defend against very large scale aggression. Chinese development of nuclear weapons will, however, permit them to engage in nuclear blackmail. The role, if any, which our theater nuclear forces can play in meeting this Chinese threat remains to be defined. It is not clear that our current deployments are optimum for either military or political requirements in Asia. We do not yet have adequate studies to reach sound judgments on the question of the proper size and composition of our nuclear arsenal. Until such studies are completed I do not believe that any increase in our Pacific theater based nuclear forces is warranted.

IV. THEATER NUCLEAR FORCE MIX

Though our theater nuclear weapons appear sufficient in quantity, the Nuclear Planning Working Group, NATO Special Committee of Defense Ministers in April 1966 concluded that "the optimum mix of nuclear weaponry might profitably be further studied". Studies to date have produced the following results.

^{1/} The JCS consider that an increase in weapons for Europe must be examined in the coming year.

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Taking into account our external forces' contribution against targets in East Europe, I consider these forces sufficient for the entire QRA task. Accordingly, I see no need to increase FRG missiles, even if the FRG decides to follow U.S. example and increase launchers per battalion. The JCS have confirmed the need to place Pershing on QRA, but they are studying further the force level required.

Pershing could be modified to reach well into the USSR, but I consider our external forces adequate for this purpose and intend to focus any improved Pershing capability against East European targets short of the USSR.

I believe that an appropriate peacetime QRA level can be provided by a portion of the Pershing force (perhaps 25 percent) and some QRA aircraft as necessary, pending completion of the Pershing build-up. When

ACE combat forces deploy upon receipt of strategic warning, the non-alert Pershings would also deploy, taking over any targets covered by aircraft in peacetime and bringing QRA forces to full alert. Concurrently, all aircraft can be withdrawn from QRA and made available for immediate use if necessary in nonnuclear conflict to which they are much better suited. Although the aircraft would retain their nuclear capability, nuclear missions would become secondary; their primary orientation for purposes of system design, training and logistics would be nonnuclear warfare. The following table indicates the number of aircraft that might be involved in nuclear missions.

Air Defense Weapons. Until now, nuclear air defense warheads have been justified on two grounds: high effectiveness against weapon carriers (carrier kill) and ability to destroy the nuclear elements of weapons aboard carriers (weapon kill) in order to prevent damage if the enemy fuzes them to detonate upon impact whether or not deliberately dropped ("dead man fuzing"). Individual Nike Hercules warheads, for example, are expected to achieve the following carrier and weapon kill probabilities, taking account of overall system reliability and effectiveness:

NIKE HERCULES SINGLE SHOT KILL PROBABILITY AGAINST
AIRCRAFT AND THEIR NUCLEAR WEAPONS

Although nuclear warheads are more effective than nonnuclear ones, I believe that deployment of large ratios of nuclear to nonnuclear warheads per battery is not remunerative for two reasons. First I do not accept the weapon kill criterion for tactical defense. It seems unlikely that the enemy would employ "dead man fuzing". We do not arm our own weapons this way because the advantages of doing so do not warrant the attendant increased risk of accidental explosion over friendly territory, or even on enemy populated areas in a limited nuclear conflict.

Extended Range Lance. It may prove desirable to modify the Lance missile so as to deliver nuclear warheads to almost twice the range of the heavier nonnuclear warheads. If this concept proves feasible, major economies can

1/ The Secretary of Army and JCS recommend deferral of this decision pending further study. However, I consider the decision to be justified on the basis of evidence available. If subsequent study indicates that a different level should be provided, we will revise the program as necessary.

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be realized by substituting Lance for Sergeant, whose \$30 million recurring operating costs should offset the necessary additional RDT&E and procurement costs of the Lance within three or four years after the system becomes operational. Because of the Lance launcher's high rate of fire (up to 6 rounds per hour versus Sergeant's one round per hour), Lance launchers could substitute for Sergeant launchers on less than a one-for-one basis and maintain or even increase total capability.

Despite their advantages, the use of ADMs would risk escalation by violating the demarcation between nuclear and nonnuclear weapons, and the seriousness of such an act would be reduced only slightly by the fact that ADMs are not subject to aiming errors and would be detonated on friendly territory. Their use must therefore be subject to the same strict political control as other nuclear weapons.

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Since it seems most unlikely that all of these targets would have to be demolished in a war, I have not accepted the JCS recommendations that the ADM stockpile be increased. If warheads are released for use in the covering area, the conflict may be resolved before many deeper targets are executed. In the more likely event that warheads are not released before much of the covering force has been driven in, many of the covering force targets would not be destroyed - and perhaps not many in the rear area. Furthermore, conventional demolitions or nuclear artillery might be acceptable alternatives in a number of cases even though less effective. I have asked the JCS to review SACEUR's ADM requirements in the light of possible substitutes.

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The high costs of the nuclear-only Sergeant suggest the desirability of substituting an extended range Lance for Sergeant, if feasible. The data raise further important questions, for example: (1) Would the greater economy of Nike Hercules to Lance warrant increasing its surface-to-surface role? (2) Considering that Lance warheads cost more than Honest John warheads, and 155 shells about twice as much as 8-inch shells, do the nonnuclear advantages of the newer Lance and 155mm warheads justify phasing Honest John and 8-inch battalions out of the inventory as is being considered in an Army optimum artillery mix study? I am asking the Chief of Staff, U.S. Army to refine the cost base of Army systems and to study trade-offs within and between alternative mixes.

V. CONTROL AND USE OF THEATER NUCLEAR FORCES

The military effectiveness and political impact of theater nuclear weapons have required that special safeguards, communications and decision procedures be established for these weapons.

Communications. To permit rapid release, special U.S. communications have been installed to all weapons custodians, primarily through fixed plant installations that are highly vulnerable in high intensity nuclear conflict; a secondary system is provided by an Alternate Airborne Command Element (AACE) scheduled to become continuously airborne in 1967. In general, I am opposed to procurement of theater communications solely to cover unlimited nuclear contingencies, unless their costs are commensurate with the small contribution that theater nuclear forces are likely to make in general war. Accordingly, I question the necessity

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of keeping the AACE continuously airborne and I am cancelling a scheduled \$32 million improvement of the main tropospheric scatter stations linking ten new custodial sites and installing low frequency equipment at 90 locations.1/

Decision Procedures. The Nuclear Planning Working Group (NPWG) of the Special Committee of NATO Defense Ministers is considering the problem of deciding when use of nuclear weapons may be warranted. SACEUR's political guidance on this subject is now twelve years old and outdated since it does not envisage limited conflict with the Soviets and since the initiation of the use of nuclear weapons may no longer be clearly in the interests of NATO.

In NPWG discussions the FRG and Turkish ministers have suggested that in view of the urgency of releasing nuclear weapons when required, circumstances might warrant predelegation of ADM release authority to field commanders. This is contrary to U.S. policy, but since it is of interest to our Allies, I believe that we should consider the problems of transmitting and processing requests for weapon release in crisis. I am therefore directing the JCS to investigate the probable time delays in processing a request for selective ADM release in accordance with current procedures. As a related matter, I am also requesting the JCS to undertake a special study of procedures and facilities required to keep decision makers at all levels informed of crucial events on the battlefield so as to be adequately prepared for critical decisions.

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Decision time is further related to the degree of military and political understanding of nuclear options available. Our dual capable delivery systems and spread of yields provide a wide range of options, ranging from the subkiloton ADMs, bombs, and accurate howitzers to the larger air and missile delivered yields and ranges. In order to streamline procedures and render this capability most effective, various studies have proposed that several levels of response be planned; for example: subkiloton ADMs only; subkiloton ADMs, Davy Crockett and 155mm; all battlefield weapons under 2 kilotons; targets only within range of battlefield weapons; etc. This general approach appears to be worth further development. The JCS are studying it.

It is pertinent to note that in the twelve years since political guidance was issued to SACEUR the Alliance has not achieved a workable mechanism for resolving divergent national views. Individual allied officers have been integrated into NATO nuclear planning at military levels, but to date there has been practically no national participation. A permanent arrangement should be made at the highest political-military level to study nuclear problems and assist in working toward an alliance consensus. The NPGW reached similar conclusions at its meeting in London in April 1966. Such arrangements should permit continuation of fruitful information exchanges and provide a useful arena in which the U.S. can develop further its case on the role of nuclear forces in NATO strategy.

Annex A

OPPOSING NUMBERS OF THEATER NUCLEAR WARHEADS
(Rounded)

Annex B

AUTHORIZED WORLD-WIDE DISPERSAL OF U.S. THEATER NUCLEAR WARHEADS

Annex C

U.S. NUCLEAR WEAPON SUPPORT IN NATO EUROPE^{a/}
(End Fiscal Year)

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ANNEX D

Allied Systems Supported By U.S. Theater Nuclear Weapons^{a/}

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DFMS for 1967
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Revised January 11, 1968
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MEMORANDUM FOR THE PRESIDENT

SUBJECT: Theater Nuclear Forces (U)

My continuing review of the role of theater nuclear and related chemical and biological forces leads me to the following conclusions:

1. Theater nuclear weapons are not a substitute for conventional capabilities. The growth of Soviet nuclear forces has created strong reasons, particularly in NATO, for avoiding the damage inherent in nuclear war except when our most vital interests are clearly threatened. We should program forces to meet all but the largest conventional attacks with conventional means and chemical attacks with some chemical retaliation as well. Even against the largest conventional attacks we should not assume that theater nuclear weapons would be used initially.

2. Nuclear weapons are a necessary complement to conventional forces. They can be used to support our forces if we fail to contain large-scale conventional aggression. They contribute to deterring Soviet attacks with tactical nuclear weapons, and they will permit us to respond in kind if such weapons are used.

3. We buy theater nuclear forces primarily for deterrence and, if deterrence should fail, to give us an option short of strategic nuclear war. We need to improve our capabilities for fighting a controlled and limited theater nuclear war. In particular, we need to improve our capabilities for the selective use of nuclear weapons during the initial stages of such a war.

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9

I. ROLE OF NUCLEAR, CHEMICAL, AND BIOLOGICAL WEAPONS IN THEATER CONFLICT

A. Role of Theater Nuclear Forces in Europe

One reason we keep tactical nuclear weapons in Europe is to deter a Soviet tactical nuclear attack. This requires enough force to make the cost to the Soviets of launching such an attack greater than the gain. It also requires protecting our weapons and control systems to reduce Soviet incentives for a nuclear first strike.

Tactical nuclear weapons also supplement our conventional forces in deterring all-out Soviet conventional attacks.

Our threat to use theater nuclear weapons is more believable if we can keep their use limited without having to go to all-out nuclear war. Limits or restraints could take various forms -- type and location of targets, number and yield of weapons, extent of battle area, and type of explosion. Such restraints, if observed, would greatly reduce civilian casualties. For example, 1,000 nuclear weapons (airbursts only) against military targets on a single corps battlefront would cause about 300,000 civilian casualties. In contrast, 9,000 weapons (air and ground bursts) in a regionwide attack limited to military targets, and avoiding cities, would cause about 20 million civilian casualties. I doubt, however, that such restraints would be observed for long in the face of pressures for escalation. Nevertheless, the possibility of limiting casualties leads us to improve our capability for exercising restraint.

Nuclear war cannot be kept limited without good command and control, communications, and procedures for releasing weapons and carrying out contingency plans. Our capabilities are inadequate now, although we

TOP SECRET

U.S. THEATER NUCLEAR WARHEADS & IN SUPPORT OF U.S. AND ALLIED FORCES
(JCS Stockpile Accommodations, Where Different, in Parentheses; System Accommodations Not Shown) b/

FWL FWG FWB FWL FWK

Out-Test Objective
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TOTAL U.S. Allies

plan to improve them in ways discussed later. Even with such capabilities there will be intense pressure to widen the conflict. The temptation would be high, for example, to attack the enemy's nuclear delivery systems before they could be used or to destroy his massed ground forces before they could disperse.

For purposes of deterrence, how well our forces can meet an initial tactical nuclear assault is more important than how long a campaign we can conduct. Our hope is that if theater nuclear war occurs, it can be restrained. Our theater nuclear forces should permit us to force withdrawal of Warsaw Pact ground and tactical air forces using theater nuclear weapons in a gradual, controlled manner. The level of force required to do this is described on page 7 as the "Campaign" force alternative. Furthermore, we should plan for an initial conventional defense and not necessarily for the early use of nuclear weapons.

We cannot rely on theater nuclear forces for more than deterrent roles, although we program enough forces for a theater nuclear campaign. In particular, tactical nuclear forces are no substitute for conventional forces. This is true because our ability to keep a tactical nuclear war limited is doubtful: tactical nuclear operations can probably not be sustained for long; and Soviet tactical nuclear forces, as shown in the next table, are now too strong to give us much prospect of achieving a meaningful military victory.

C. Role of Chemical and Biological Weapons

Although we usually think of nuclear weapons as the ultimate means of mass destruction, as the next table shows, biological and, in some cases chemical munitions, are cheaper and more dangerous. More importantly, these munitions can be produced by many countries. They are therefore potentially even more dangerous to us than nuclear weapons. The large number of potential users of these means -- particularly of biological warfare -- strongly motivates us to deter their use by anyone.

1. Chemicals

Lethal chemicals are weapons of mass destruction only against unprotected personnel. When troops are protected, lethal chemicals are less effective than conventional ammunition. (However, troops in protective clothing are also less effective.) Since Soviet forces are well-trained and equipped to defend against a chemical attack, we gain little advantage by buying a large chemical program in addition to our tactical nuclear forces. Instead, we need only enough to deter Soviet use and force the Soviets to take protective measures. More importantly, we need to improve our defense against chemical warfare with gas masks, protective suits, and proper training. Even this limited program calls for better chemical defenses than most NATO countries have been willing to buy. We rely on our tactical nuclear forces to deter massive chemical attack, just as we do against a massive conventional attack. Pending completion of our study of chemicals needed for these purposes, I am deferring a decision on JCS-recommended additions to our chemical stockpile.

Non-lethal chemicals are useful against insurgents, particularly when enemy troops and civilians are mingled. In such cases, the alternatives to non-lethal chemical attacks are ineffective conventional operations or high casualties to civilians and our own troops.

2. Biological Weapons

We cannot substitute biological for strategic nuclear forces, so a biological warfare program is an additional cost. Since we keep a nuclear retaliatory capability anyway, a lethal biological capability is not needed.

II. ADEQUACY OF THEATER NUCLEAR FORCES

Since we keep conventional forces with strong artillery and missile forces to support NATO strategy, the theater nuclear capability is added at least cost by providing nuclear weapons for these nonnuclear delivery systems.

Most of our spending on theater nuclear forces has been for nuclear weapons, and we have come to measure the adequacy of our theater nuclear forces in terms of the size and balance of our nuclear stockpile. While this is useful, it has led us to pay too little attention to control, communications, and operational plans in weighing the overall adequacy of our theater nuclear forces.

The size and design of our theater nuclear forces should fit their limited role. We should not try to provide forces for a long tactical nuclear war nor should we set aside special theater nuclear forces for a general war. Their contribution in general war is too small compared to that of our strategic forces to be considered anything more than a bonus. The next sections show that our present tactical nuclear stockpile is more than adequate.

A. Theater Nuclear Forces in Europe

a/ Includes tactical nuclear bombs, artillery, and strike missiles.

The Short Battle would give enough force to stalemate enemy front line divisions, but not enough to cope with his local reserve divisions. This level meets most deterrent needs. It may be all that either side can control at this time. The stockpile required to support this level is much smaller than the Soviet tactical nuclear stockpile.

The Extended War would give means to fight the Warsaw Pact's mobilized reserves. This is based on optimistic assumptions that we have time to use mobilized troops, that neither side escalates, and that both sides learn how to reduce the rate of loss of troops and support means. This level is not worth buying. It costs \$700 million more per year than the Campaign level. Nuclear conflict of this scope is not likely to stay limited this long, and such an extended nuclear conflict would not be tolerable to our Allies.

2. Support of Allies

Appendix D shows all allied theater nuclear delivery systems that we now support and plan to support in the future. The systems are also included in the table on page 3.

Support of NATO's 155mm howitzer and LANCE systems is now being studied by CINCEUR and discussed with our Allies. Before approving nuclear support for these systems, I will review the Army studies now underway regarding the best mix of nuclear weapons.

3. Present Capabilities

The nuclear stockpile authorized for dispersal to Europe is large enough to support the Campaign level. In my judgment this is adequate. This was also the judgment of the NATO Nuclear Planning Group meeting in April, 1967. The Ministers "accepted that tactical nuclear weapons available to SACEUR and SACLANT appear to be sufficient in quantity, but felt that both the mix of weapons and the circumstances in which they might be used required further detailed study."

Moreover, other parts of our posture would fail before our stockpile was exhausted. Unless we succeed in reducing the vulnerability of our nuclear weapons in Europe and improve our understanding and means for conducting tactical nuclear war, we could not usefully employ more than the number of weapons needed for the Short Battle concept.

B. Control and Use of Theater Nuclear Weapons in Europe

While we are making progress in developing means for safeguarding nuclear weapons and can release them quickly, we are not well-prepared to make critical decisions on how and where they will be used. Nor can we respond rapidly to decisions to use them selectively. We do not have adequate plans for limited tactical nuclear war. We must give civilian and military authorities improved means for following battle situations: better nuclear options to choose from; and more insight into how military, diplomatic, and intelligence factors affect nuclear war.

2. Theater Nuclear Options

The NATO Ministers of Defense have agreed to a new NATO strategy of flexible response. NATO conventional forces should be large enough to help deter a deliberate non-nuclear attack and be able to deal successfully with a conflict caused by miscalculation. They should also maintain the capability for carefully controlled escalation up to and through the use of theater nuclear weapons.

We should have contingency plans ready and U.S. forces trained to a much greater extent than they are now for the controlled use of theater nuclear weapons. Our current war plans provide either for releasing all tactical nuclear weapons or for selective release of a very few weapons, but not for gradual and controlled release as the situation demands. The selective release format that we have now requires so much data and staff work to process, that we might act too late, or be faced with intense pressure for releasing large numbers of weapons to be used at commanders' discretion. We need more prior planning in the form of a range of nuclear options linked to a situation-following system like that discussed above. For each region we should have options such as: (1) show-of-force demonstration; (2) response-in-kind; (3) discrete fire on located enemy maneuver units; (4) larger terrain fire on poorly located battlefield targets; and (5) selective strikes on bridges, airfields, and other deep targets.

C. Theater Nuclear Forces in Asia

1. Capabilities vs. USSR

The threat of an all-out Soviet conventional attack in Asia is small. In the unlikely event that they should launch such an attack, our conventional forces and those of our Asian Allies could probably defeat them without using nuclear weapons. Should the Soviets initiate the use of theater nuclear weapons in Asia, the risks to them would be extremely high.

2. Capabilities vs. China

China presents the main land threat in Asia, primarily in Korea and Southeast Asia. However, as shown in my Memorandum on General Purpose Forces, the Chinese have a very limited ability to attack beyond their borders. Moreover, the forces opposing the Chinese have radically improved as a result of our Military Assistance Program. South Korean land forces alone, for example, provide a better manpower ratio than was needed to stop the Chinese during the Korean war. Thus, we can probably stop a Chinese invasion without using nuclear forces.

Although China is unlikely to have a battlefield nuclear capability before five to ten years, the use of U.S. nuclear weapons against invading Chinese forces would be quite unattractive as a substitute for conventional defense. Not only would such use divide our Allies, it would carry a high risk of Soviet involvement and could lead to a U.S.-Soviet nuclear war.

We and our Allies have enough conventional force in Southeast Asia to block a Chinese/North Vietnamese invasion and hold the key areas. If we did need nuclear weapons we would have time to fly them in. Alternatively, we could conduct nuclear strikes from our attack carriers in a few hours. Thus, we do not need to keep nuclear stocks in Southeast Asia.

We do not need to keep tactical aircraft in the Pacific on nuclear alert for PACOM war plans or for the SIOP. The need for nuclear alert (called Quick Reaction Alert in Europe) has been defended on the grounds that it is needed to reach targets rapidly and to take off quickly for survival. Neither of these arguments applies in Asia. The Chinese do not have an effective means for nuclear pre-emption against U.S. theater forces. And, as shown on the next page, the SIOP is designed so that Asian nuclear threat targets are covered by missiles.

- a/ Time-sensitive, nuclear threat targets in China and the USSR East of 100° E, extracted from the SIOP.

Nevertheless, we continue to hold tactical aircraft in the Pacific on nuclear alert. We should not, however, program special resources for these aircraft to stand nuclear alert or to take part in the SIOP. While bombs bought for tactical nuclear war may be used against SIOP targets, they should not be justified on this basis.

D. Summary of the Adequacy of Theater Nuclear Forces*

The JCS TANWERE study developed a set of scenarios for planning the tactical nuclear stockpile in 1970. TANWERE's scenarios assume the following: (1) we need nuclear weapons to defeat 129 Warsaw Pact divisions in Europe, plus 94 Chinese and Asian Communist divisions in Korea and Southeast Asia, plus ten Russian divisions in Iran; (2) we can keep enough air bases to conduct effective nuclear air operations against Warsaw Pact general purpose forces; (3) Chinese divisions will continue attacking after we hit them with nuclear weapons; and (4) tactical bombs should be stockpiled to hit Chinese military and industrial targets in a limited nuclear war. The next table shows my view of the total number of weapons needed for these scenarios and compares them with the stockpile for 1970.

* See Appendix A for FY 68 weapon dispersal authorization.

THEATER NUCLEAR WEAPONS FOR ILLUSTRATIVE SCENARIOS a/
(TANWERE Totals in Parentheses)

1. TANWERE reserves separate stockpiles of tactical nuclear bombs in addition to PERSHINGs for general war (), and for attacking Pact divisions in Europe and the other limited contingencies. My estimates assume that one stockpile is adequate for either task.

We would not fight all these contingencies at once except perhaps in general war, in which case the theater conflict is of relatively little importance. As the table shows, our tactical nuclear stockpile is more than adequate.

III. MIX OF THEATER NUCLEAR FORCES

The next table shows those parts of our theater nuclear forces that have high annual costs. It also shows the advantage for the nuclear mission of dual purpose nuclear/conventional delivery systems.

U.S. COSTS FOR THEATER NUCLEAR FORCES
(S Millions Per Year)

- a/ See Appendix C.
- b/ Attributes total aircraft cost to nuclear mission.
- c/ See Appendix D.

The high cost of the nuclear-only systems shows why we try to use dual-capable systems instead. This has kept the average cost per tactical weapon, including nuclear attributable system costs, to one-tenth the cost per weapon in our strategic nuclear forces.

Tactical aircraft tied to the strike mission on Quick Reaction Alert (QRA) are not available for use in conventional war where their flexibility is of most value. Also, aircraft-delivered nuclear weapons are more vulnerable than missiles and their time to target is longer. This puts pressure on commanders to launch the aircraft early whether or not that is desirable for other reasons.

PERSHING missiles do not have these disadvantages. Carrier-based aircraft are less vulnerable than land-based aircraft, but they should not be held on nuclear alert. Both systems are better than land-based tactical aircraft for the limited role of our theater nuclear forces.

B. Strike Missiles

C. Tactical Missiles

Development of LANCE missiles is now underway: if successful, LANCE could be operational by 1972. With them our LANCE battalions could then take over the mission now performed by SERGEANT. This would permit phasing out SERGEANT at a saving of \$300 million over ten years.

D. Nuclear Artillery

E. Atomic Demolitions Munitions (ADMs)

ADMs are nuclear charges designed to delay an advancing army by placing obstacles in its path. The main problem with ADMs stems from our uncertainty over when nuclear weapons will be used. Sites where we expect to use ADMs are so important that we must also emplace conventional high explosive (HE) charges to hedge against nuclear weapons not being released. For a planned barrier system, the chambers into which HE is placed can be prepared during peacetime. Such pre-chambering greatly increases the effectiveness of HE while reducing the time, effort, and material needed. Therefore, the incremental value of ADMs in a preplanned barrier is very questionable.

The main role of ADMs should come after nuclear weapons have already been used and the main battle line has shifted. Then we would wish to place obstacles where we have not had time to prepare for HE charges. In such cases ADMs are much more effective than HE.

F. Theater Air Defense

APPENDIX A

FY 68 WORLDWIDE NUCLEAR WEAPON DISPERSAL AUTHORIZATION a/

Record of Decision

Revised January 11, 1968

APPENDIX B

THEATER NUCLEAR WEAPONS FOR ILLUSTRATIVE SCENARIOS, 1970

APPENDIX C

AVERAGE ANNUAL FY 68-77 THEATER NUCLEAR FORCE COSTS a/
(S Millions Per Year)

APPENDIX D

ALLIED THEATER NUCLEAR SYSTEMS SUPPORTED BY US WEAPONS a/

STRATEGIC

Revised January 15, 1968

Record of Decision

DRAFT

MEMORANDUM FOR THE PRESIDENT

SUBJECT: Strategic Offensive and Defensive Forces (U)

MASTER

7

Sanitized
by 1-5-83

I have reviewed our Strategic Offensive and Defensive Forces for FY 69-73. The tables on pages 3 and 4 summarize our force goals. For the FY 69 budget, I recommend that we:

1. Maintain a force of 1,000 Minuteman missiles. Plan on a Minuteman II force of 500 missiles in FY 69, but replace Minuteman Is and IIs used in follow-on-tests (FOTs) with Minuteman IIIs/ , leading to a force of Minuteman IIIs by end-FY 73. Delay the Initial Operational Capability (IOC) of Minuteman III from December, 1969 to July, 1970.

Develop an option to deploy Minuteman III in very hard silos or supplement the present Minuteman deployment at a cost of \$40 million in FY 69 and a total cost of \$212 million in FY 69-73. Continue the previously approved programs for buying for Minuteman missiles, and for Minuteman III.

With all the above changes, the Minuteman force will cost \$147 million less in FY 69-73 than the previously programmed Minuteman force.

2. Maintain the JCS-recommended Titan force structure by buying four missiles in FY 69 for \$12.6 million and five in FY 70 for \$13.6 million and reducing the FOT rate to four per year.

3. Continue development of Poseidon, and procure missiles in FY 69 at a total FY 69 investment cost of \$329 million. Plan on an IOC of November, 1970, based on a (the same as Polaris re-order lead time). Build up to a force of 384 on-line Poseidon by FY 75, for a total FY 69-73 investment cost of \$4,998 million. Develop a and plan on per

a force of 31 Poseidon submarines carrying an average of deployed missile. Procure MK-3s in FY 69, in FY 70, and a total of in FY 69-73. Against expected threats, this Poseidon force will have the same effectiveness as the previously programmed force with per missile, but will cost \$84 million less in FY 69 and \$394 million less in FY 69-73.

4. Defer indefinitely the JCS recommendation to deploy at a cost of \$200 million in FY 69 and a total cost of \$220 million in FY 69-73.

FOI CASE NO. EO-1 DFOI-967

Document _____ of _____ Documents

Excluded Under the Provisions of (Title) (S.) Conf. Fr. 68-05
Freedom of Information Act) 5USC552
(b) (1)

5. Disapprove the JCS recommendation to start Contract Definition of an Advanced ICBM at a cost of \$79 million in FY 69. Instead, continue Advanced Development at a cost of \$10 million in FY 69. Development, deployment, and operation of the JCS-recommended force of 350 Advanced ICBMs would cost from \$7 to \$10 billion in FY 69-75, depending on the basing.

6. Disapprove the JCS recommendation to procure a prototype Ballistic Missile Ship for \$120 million in FY 69. Ten-year costs of ten Ballistic Missile Ships would be about \$1.6 billion.

7. Approve the Air Force recommendation not to reduce the current base program for the bomber force.

Additional SRAM's for B-52s would cost \$68 million in FY 69 and a total of \$251 million in FY 69-73. As a special force for suppressing anti-bomber defenses, modify UE B-52s to carry some of the previously approved SRAM's at a FY 69 cost of \$54 million and a total cost of \$56 million in FY 69-73.

8. Disapprove the JCS recommendation for Contract Definition and full-scale development of the Advanced Manned Strategic Aircraft (AMSA) in FY 69. Development, deployment, and five-year operating costs for 150 AMSA would be \$7.3 billion. Approve instead further development of aircraft technology, as well as a program to develop bomber penetration aids.

9. Approve procurement of Sentinel, a Chinese-oriented area ABM system which also provides an option for the defense of Minuteman. The total Sentinel system investment cost will be \$4.9 billion in FY 69-73.

10.

11. Disapprove the JCS recommendation to deploy a Nike-X defense of U.S. cities against attack by the USSR. (Not a FY 69 issue; the JCS consider the FY 69 budget for Sentinel an adequate first step toward the defense they recommend.)

12. Disapprove the JCS recommendation to produce and deploy twelve UE F-12 interceptors for continental air defense at a FY 69-73 cost of \$800 million. Approve instead the Air Force recommended plan for a modernized continental air defense force that includes: (a) development and deployment of 198 improved F-106X aircraft; (b) if the Overland Radar Technology program is successful, engineering development of the Airborne Warning and Control System (AWACS) on a schedule that permits a system demonstration before substantial production funds must be committed; (c) development of the Over-the-Horizon (OTH) radar, addressing production release in September, 1970

PTIP TABLE 100--U.S. STRATEGIC OFFENSIVE FORCES

(Not subject to force controls of NSD Directive 7045.7. See detail tables for those forces subject to controls)

	FISCAL YEARS															
	1961	1962	1963	1964	1965	1966	1967	1968	1969	1970	1971	1972	1973	1974	1975	1976
Bombers: Authorized Active Inventory (AAI)	990	891	644	495	248											
B-47/RS-41	413	413	413	413	413	380	330	281	214	115	50					
B-52C-F B/	198	264	281	281	281	281	281	281	281	281	281	281	281	281	281	281
B-52G-W	44	88	88	88	88	88	88	88	88	88	88	88	88	88	88	88
B-58																
FB-111A																
Total Bombers (AAI)	1645	1656	1436	1277	1030	749	697	646	576	558	513	534	534	534	534	534
Air-Launched Missiles (UR)	216	440	580	580	540	540	480	340	340	340	340	340	340	340	340	340
MOLMD DOG A and B																
Short-Range Attack Missile (SRAM)																
Total Air-Launched Missiles (UR)	216	440	580	580	540	540	480	340	340	340	340	340	340	340	340	340
Ballistic Missile Launchers																
Missile Launchers On-Line b/																
ATLAS	28	37	126	113												
TITAN	-	21	67	108	54	54	54	54	54	54	54	54	54	45	45	36
MINUTEMAN	-	-	160	600	800	800	657	570	500	447	297	147	27			
MINUTEMAN	-	-	-	-	80	300	394	494	484	444	444	424	404	384	344	344
MINUTEMAN	-	-	-	-	-	-	-	-	-	10	180	350	520	590	610	630
MINUTEMAN	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
POLARIS	48	96	144	224	400	432	512	528	528	464	336	256	176	160	128	128
POSEIDON	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Subtotal Missile Launchers On-Line	76	174	497	1045	1254	1346	1523	1546	1576	1459	1443	1459	1521	1531	1551	1542
Independently-Targetable Missile Warheads On-Line (near-add)	76	174	497	1045	1254	1346	1523	1546	1576	1474	2721	3836	5181	5604	5922	5943
ICBM Launchers in Modernization/494L	-	-	-	-	-	-	43	36	6	59	59	59	59	6	6	6
SLBM Launchers in Conversion/Overhaul/Shutdown	22	48	48	112	64	160	144	128	128	122	208	192	160	144	144	144
Total Ballistic Missile Launchers	108	222	545	1157	1318	1506	1710	1710	1710	1710	1710	1710	1710	1701	1701	1692
Other Forces (AAI)																
QUAIL (UR)	224	392	392	392	392	390	390	390	390	390	390	390	390	390	390	390
EC-97/EC-135	1100	1122	924	902	814	682	682	677	677	677	677	677	677	677	677	677
EB-47/EC-135	99	50	33	33	30	16	11	11	11	11	11	11	11	11	11	11
EB-71	-	-	-	-	6	18	28	26	27	26	25	25	24	23	23	23
PAGEC (Post Attack Command and Control System) (B-47/EC-135)	-	20	59	60	26	30	30	33	33	33	33	33	33	33	33	33
REGULUS (UR)	17	17	17	7	-	-	4	4	12	12	12	12	12	12	12	12
YACAMO (C-130)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Other Tactical Support Aircraft	99	99	99	99	99	99	99	128	128	121	99	99	99	99	99	99
Ballistic Missile Submarines (SSBNs)																
On-Line	3	6	9	14	25	27	32	33	33	29	28	29	31	32	32	32
In Conversion/Overhaul/Shutdown	2	3	3	7	4	30	9	8	8	12	13	13	10	9	9	9
Total Forces g/																
Weapons																
Megatons																
1 Megaton Equivalents h/																
Alert Forces																
Weapons																
Megatons																
1 Megaton Equivalents h/																

g/ Does not include aircraft in Active Storage. B-52C-F aircraft in Active Storage total eight in FY 67, 45 in FY 68, and 111 in FY 69. It is not possible to estimate totals post FY 69 because of the uncertainty of flying hours generated in Southeast Asia.

h/ Each missile type shown with the number of independently targetable warheads per missile/yield per warhead in megatons (MT)/CEP of last version shown in nautical miles (NM).

i/ To be comparable with Soviet force loadings in Table 180b, force loadings reflect only those weapons which would be loaded for initial strikes by AAI aircraft, ICBM launchers on-line plus those in modernization which could be loaded with missiles during a protracted crisis, and on-line SLBM launchers. Thus, total force loadings represent our emergency combat capability in a protracted crisis. Weapons reserved for retaliatory and weapons on inactive status are not included. (Thus, for example, this table does not show that in FY 61 there were more than non-loydown bombs with a total yield of about 2 megatons, not loaded in the force and scheduled for phase-out in FY 62.)

j/ Equivalent yield is calculated by taking yield to the one-half power for weapons greater than one megaton and to the two-thirds power for weapons less than one megaton.

January 15, 1968

PTDP TABLE 110—U.S. STRATEGIC DEFENSIVE FORCES

(Not subject to force controls of DDT Directive 7045.7. See detail tables for those forces subject to controls.)

	FISCAL YEARS															
	1961	1962	1963	1964	1965	1966	1967	1968	1969	1970	1971	1972	1973	1974	1975	1976
Air Defense Systems																
Aircraft (Authorized Active Inventory)																
Interceptors g/																
Air Force																
P-101	435	344	343	361	318	318	318	278	140	134	134	134	134	134		
P-102	322	322	281	239	259	94	37	29	29							
P-104	-	-	46	46	40	40	37	26	26	26	26	26	26	26		
F-106	304	307	264	281	274	272	257	251	251	238	238	238	219			
F-106X	-	-	-	-	-	-	-	-	-	-	-	-	19	238	238	238
Subtotal Air Force	1061	973	934	947	891	724	649	584	446	398	398	398	398	398	238	238
Air National Guard (ANG)																
F-84	275	220	165	210												
F-89	275	275	248	248	180	100	40	40	40							
F-100	66	67	72	42												
F-102	130	127	152	191	208	344	404	404	404	285	285	285	285	107	28	28
F-104	61															
Subtotal ANG	807	689	637	591	348	444	444	444	444	285	285	285	285	107	28	28
Naval																
F-4	28	30														
Total Interceptors	1896	1692	1571	1538	1239	1168	1093	1028	890	683	683	683	683	505	266	266
Tactical Support for F-106X																
(C-130) g/	-	-	-	-	-	-	-	-	-	-	-	-	20	73	73	73
Other Tactical Support Aircraft	160	169	154	252	164	176	173	175	175	153	153	153	153	153	153	153
Target Aircraft	243	432	420	407	420	343	330	308	265	262	255	255	254	254	254	254
Surface-to-Air Missile Launchers g/																
BOGARC	236	307	343	200	180	180	172	164	156	148	140	132	124			
WIKI (HERCULES AND AJAX) g/:	1844	1372	1208	1009	839	654	654	654	654	552	552	552	552	552	552	552
Army	608	552	428	357	473	473	473	473	473	429	429	429	429	429	429	429
NAVY	-	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48
Total SAM Launchers	2730	2279	2067	1614	1340	1157	1149	1141	1133	1177	1169	1161	1153	1029	1029	1029
Control & Surveillance Systems g/																
MOBAC Combat Operations Center	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
SAGE Combat Centers	8	8	8	7	7	6	6	6	5	5	5	5	5	5	5	5
SAGE Direction Centers	20	21	18	16	16	14	14	14	13	11	11	11	11	11	11	11
STIC II Control Centers	-	-	-	-	-	13	13	9								
STIC III Control Centers	-	-	-	-	-	-	-	-	12	15	15	15	15	15	15	15
Search Radars	182	179	169	168	162	158	154	141	128	128	128	128	128	128	128	128
ANG Search Radars	6	6	6	6	6	6	5	3	3	3	3	3	3	3	3	3
Cap Filler Radars	-	-	-	-	-	-	91	17	17	17	17	17	17	17	17	17
Distance Early Warning (DEW) Radars	67	67	67	39	39	39	39	39	39	39	39	39	39	39	39	39
Over-the-Horizon (OTH) Radar	-	-	-	-	-	-	-	-	-	-	-	-	-	2	2	2
(Sea-Beacon)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Surface-to-Air Missile (SAM) Fire	10	28	28	26	25	19	22	22	22	22	22	22	22	22	22	22
Coordination Centers	11	22	22	22	19											
Surveillance & Warning Aircraft g/																
EC-121: Air Force	77	76	85	85	83	80	80	80	80	80	80	80	80	80	80	80
Naval	55	49	49	47	22											
Airborne Warning and Control	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Systems (AWACS)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total Surveillance/Warning Acft	132	125	134	132	105	80	80	80	80	80	80	80	80	80	80	80
Missile & Space Defense Systems																
Ballistic Missile Early Warning																
System (BMEWS) (4741)	2	2	2	3	3	3	3	3	3	3	3	3	3	3	3	3
OTH Radar (Transmit/Receive)	-	-	-	9	24	24	24	15	15	15	15	15	15	15	15	15
Other	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SPARTAN																
SPRINT	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Missile Sites Radar (MSR)	-	-	-	-	-	-	-	-	-	-	-	-	-	3	6	6
Perimeter Acquisition Radar (PAR)	-	-	-	-	-	-	-	-	-	-	-	-	-	5	13	17
Batteries	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

g/ Tentative air defense plan. Force levels after FY 69 to be resolved in 1968.

h/ Equivalent to deployed, operational missiles. Includes training launchers.

i/ The precise number and location of HERCULES batteries to be phased out in FY 70-71 will be determined later this year.

j/ The number of deployed operational missiles is three times the number of launchers.

k/ Includes CONUS, Alaska, Hawaii, Puerto Rico, Canada, Greenland, and Iceland.

(d) examining the possibility of augmenting our air defense force during periods of high tension with at least 300 fighters from Tactical Air Command (TAC), Navy, and Marine Corps training units plus carrier-based aircraft as available; and (e) selective phase-down of the current Century interceptor force and portions of the SAGE/BUIC system, the National Air Space Surveillance System, and Nike-Hercules radars.

13. Extend the civil defense program at a FY 69 cost of \$77.6 million.

14. Disapprove the JCS recommendation for \$191 million for military survival measures. Continue instead the approved program at a cost of \$47 million for FY 68-73.

I. THE GENERAL NUCLEAR WAR PROBLEM

The main objective of our nuclear forces is to deter nuclear attacks on the U.S. Our ability to strike back and destroy Soviet society makes a Soviet decision to strike the U.S. highly unlikely. By choosing to develop and deploy harder-to-attack forces, we can reduce even more the likelihood of such an attack. Unable to destroy most of our nuclear striking power, the Soviets would gain little by striking first.

Although the U.S. and the USSR are strongly deterred from nuclear attacks on each other, a nuclear war anywhere in the world could lead to a war -- and most likely a nuclear war -- between the two countries. Thus to avoid a nuclear war with the USSR, we try to make all nuclear wars unlikely. This objective includes:

1. Reducing any possible loss of control of forces in a crisis.
2. Deterring nuclear attacks or intimidation of allied or neutral countries.
3. Discouraging additional countries from acquiring nuclear weapons.
4. Emphasizing and maintaining the firebreak between conventional and nuclear weapons.

Like us, to deter a first-strike nuclear attack, the Soviets maintain the ability to strike back and destroy our society. When they take steps to reduce the damage that we can inflict (e.g., by deploying ABMs), we react to offset these steps. I believe that the Soviets would react in the same way to similar U.S. steps to limit damage to ourselves.

Our analysis shows that the Soviets can protect their second strike capability against any threat we might pose. Since a second strike capability is vital to the USSR, I believe they will insure the survival of this capability. Convinced that the Soviets would counter a major U.S. attempt to take away their second strike capability, we have chosen not to start a major Damage Limiting program against the USSR.

These considerations lead us to depend upon deterrence to keep the USSR from attacking us. Against China, conversely, we can buy an effective defense of CONUS as insurance against a failure of deterrence. China's more primitive technology and poorer economy allow us to develop an effective defense against her nuclear attack capability into the 1980s.

What if deterrence fails and a nuclear war with the USSR occurs? If the war began with an all-out Soviet attack, including our cities, we would reply in kind. If the war started with less than an all-out attack, we would want to carry out plans for the controlled and deliberate use of our nuclear power to get the best possible outcome. The lack of such nuclear war plans is one of the main weaknesses in our posture today.

II. SOVIET AND CHINESE STRATEGIC FORCES

The following table compares U.S. and Soviet intercontinental forces in terms of total megatons, launchers, and bombers.

U.S. VS. SOVIET STRATEGIC NUCLEAR FORCES a/

	1968		1970		1972	
	<u>U.S.</u>	<u>USSR</u>	<u>U.S.</u>	<u>USSR</u>	<u>U.S.</u>	<u>USSR</u>
<u>Ballistic</u>						
<u>Missile Launchers</u>						
Soft ICBMs	-		-		-	
Hard ICBMs	1054		1054		1054	
FOBS	-		-		-	
Mobile ICBMs						
(non-add)	-		-		-	
SLBMs	656		656		656	
TOTAL LAUNCHERS	1710		1710		1710	
 Intercontinental						
Bombers	646		558		534	
 <u>Total Force Loadings</u>						
Weapons						
Megatons (MT)						
1 MT Equivalents						
 <u>Alert Force Loadings</u>						
Weapons						
Megatons						
1 MT Equivalents						

a/ U.S. programmed vs. National Intelligence Estimates (NIE) for USSR.

Numbers of missile launchers and bombers are a poor measure of the relative capabilities of U.S. and Soviet strategic forces; total megatons are worse. Yet these measures are frequently used in drawing comparisons

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between U.S. and Soviet nuclear capabilities. The important question is not total megatons or numbers of delivery systems, but whether our forces can effectively carry out their missions -- Assured Destruction and attacks on Soviet forces to limit damage. Factors such as accuracy, reliability, survivability, and control are decisive in evaluating the effectiveness of our forces. Our missiles appear to be more reliable than Soviet missiles; they are more than twice as accurate. In 1972, programmed U.S. missile forces could destroy some hardened targets. The expected Soviet ICBM force could destroy only some such targets.

We are buying large numbers of smaller, accurate weapons because they better meet our strategic objectives -- even while reducing total U.S. megatons. The following table compares the number of targets destroyed by Poseidon, with a single programmed for Poseidon, with a single of the weapon, As the table shows, the the yield of the weapon -- can Poseidon -- with only destroy up to times as many targets.

EFFECTIVENESS OF ALTERNATIVE, EQUAL-WEIGHT PAYLOADS a/

Number of airfields	
Number of hard silos <u>b/</u>	
Number of small cities	(100,000)
Number of medium cities	(500,000)
Number of large cities	(2,000,000)
Number of defensive interceptors	
needed to counter <u>c/</u>	
Total megatons	

a/ Reliability equals , Circular Probable Error (CEP) equals

Such calculations have convinced me and the Services of the superiority of Multiple Independently-targetable Re-entry Vehicles (MIRVs) over single, large megaton weapons for attacking cities or military targets, defended or otherwise. Therefore, the best way to increase the effectiveness of our forces is by putting MIRVs on Minuteman and Poseidon.

During 1964-65, the USSR maintained small silo ICBM construction starts at the rate of about launchers per year. It this rate during the first half of 1966, then . The deployment appears to have stopped except for filling out groups already under construction.

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The Soviets have continued to test Fractional Orbit Ballistic Systems (FOBS), which would be useful in an attempt to deny warning to our strategic bombers, if we took no counter actions.

A recent re-evaluation of the present Soviet submarine force indicates about operational Soviet ballistic missile submarines than previous intelligence estimates. The USSR is, however, now making operational a new class of large, nuclear-powered, ballistic missile submarines to carry sixteen 1,000 to 2,000 nautical mile (NM) missiles. Intelligence estimates project of these ships in service by mid-1971 and by 1976. Diesel-powered Sea-Launched Ballistic Missile (SLBM) submarines no longer are estimated to be part of the Soviet threat to the U.S.

The Soviets also appear to be pursuing two advanced defensive programs:
 (1) a long-range anti-ICBM system around Moscow with about launchers,
 and (2) a system across European USSR.

We expect both systems to become partially

The Chinese were expected to begin operational deployment of a Medium Range Ballistic Missile (MRBM) with a in 1967, but did not do so. China also has under development a much larger and more complex missile system, possibly an ICBM. They were expected to complete a large facility for large launchers late in 1967, but did not do this either. It appears that they are about the ICBM schedule that we had previously estimated, which would still allow an initial operational ICBM deployment in the early 1970s.

III. ASSURED DESTRUCTION

We deter a rational enemy from launching a first strike against us by maintaining a strong and secure ability to retaliate under any circumstances. We measure our second strike ability in terms of Assured Destruction -- the capability to inflict unacceptable damage, calculated under extremely conservative assumptions, on the USSR, even after sustaining a surprise Soviet first strike. I believe that our ability to kill from one-fifth to one-fourth of the Soviet people, including at least two-thirds of the people and industry in their large cities, is enough to deter the USSR from launching a first strike against the U.S., even in extreme situations.

However, our Assured Destruction capability does not indicate how we would use our forces in a nuclear war. We must design our forces to cope with many situations, including a war which neither side intended. We reduce the likelihood of such a war by keeping tight control over U.S. forces under all circumstances; by maintaining communications at all times with our forces, the governments of our Allies, and, as appropriate, our enemies; and by retaining options in selecting appropriate responses. If we failed to deter nuclear war, we would want to be able to follow a policy of limiting our retaliatory strikes to the enemy's military targets and not attacking his cities if he refrained from attacking ours. In most situations we would have many missiles surviving to attack Soviet military targets, while withholding enough for Assured Destruction. For this task, ICBM accuracy is very worthwhile.

A. Against the Expected Soviet Threat

Against the expected Soviet threat, our strategic forces can survive a well-executed Soviet surprise attack and carry out an effective second strike. Even after a surprise Soviet first strike with the strongest Soviet forces in our NIE, we could launch more than _____ with a yield of more than _____, against the USSR in 1976.

How much damage the surviving weapons could cause depends on the effectiveness of Soviet defenses. The next table shows that even against the high NIE-estimated threat, the U.S. Assured Destruction capability is much greater than the 20 to 25% which I believe is needed for deterrence against a Soviet first strike.

CAPABILITIES OF U.S. PROGRAMMED FORCE FOR ASSURED DESTRUCTION (Percent of Soviet Population Killed)

	<u>FY 69</u>	<u>FY 72</u>	<u>FY 76</u>
Against High NIE Threat			
Against Low NIE Threat			

Against High NIE Threat
Against Low NIE Threat

If we could be sure that Soviet forces would stay within the range of the NIE -- both in quality and numbers -- we could consider smaller strategic forces.

B. Against China

While China may be able to threaten her neighbors and U.S. bases in Asia by 1972, she will not pose a threat to the U.S. second strike capability. If the U.S. attacked China with nuclear weapons it would be solely in retaliation for some lesser act of aggression, probably involving Chinese nuclear weapons. Rather than calling for the destruction of China, such an act would call for selective attacks on government, military, or industrial targets. Missiles would be needed only for attacking time-sensitive Chinese nuclear targets. Bombers could cover other targets.

One megaton warheads detonated over Chinese cities would destroy half of China's urban population and more than half of its industry. The recommended strategic forces are sufficient to inflict this destruction on China while still maintaining our Assured Destruction capability against the Soviet Union.

C. Against Greater-Than-Expected Soviet Threats

The following table compares the 1976 balanced greater-than-expected threat, used in the following analyses, with the High NIE threat.

	<u>High NIE</u>	<u>Greater-Than-Expected</u>
Independently-targetable missile warheads on-line		
<u>Air Defenses</u>		
Look-down fighters a/		
Low-altitude SAM Launchers		
<u>ABM Launchers</u>		
Area		
Terminal b/		

Programs required to support such an effort should prove technically difficult, expensive, and, since we have clearly indicated we would respond, hold little hope of providing the Soviets with a net gain in effective first strike capability. Nevertheless, to insure that these threats remain unlikely, and to maintain our deterrent should they appear, we make sure that we have available the options needed to counter them.

If the USSR replaces or improves the accuracy of its and adds it could destroy Minuteman missiles in their silos. Even if the Soviets could destroy Minuteman missiles they would not eliminate our Assured Destruction capability. Our remaining SLBM's and alert bomber force can penetrate the NIE-estimated Soviet defenses and kill at least 100 million of the Soviet people through 1976. Similarly, at least through 1976, a very extensive Soviet ABM system and air defense, without greater-than-expected ICBM's, would still let the U.S. protracted

force maintain an Assured Destruction capability of [redacted] Our programmed force can cope with a greater-than-expected ABM because we already have programmed ABM hedges -- Poseidon Minuteman.

The next table shows that the U.S. programmed force can keep its Assured Destruction capability through FY 75 by putting on ea Poseidon missile, even if the Soviets deploy greater-than-expected balanced missile and bomber defenses. Short-Range Attack Missiles (SRAMs), SRAM decoys, and an air-to-air missile to protect the bombers against advanced interceptors would keep our Assured Destruction capability against this threat [redacted] through 1976.

U.S. ASSURED DESTRUCTION AGAINST GREATER-THAN-EXPECTED BALANCED DEFENSES
(Percent of Soviet Population Killed)

	<u>FY 69</u>	<u>FY 70</u>	<u>FY 71</u>	<u>FY 72</u>	<u>FY 73</u>	<u>FY 74</u>	<u>FY 75</u>	<u>FY 76</u>
U.S. Programmed Force								
U.S. Programmed Force								
plus on								
Poseidon								

a/ The first percentage shows fatalities if we are required to kill at least two-thirds of the people in defended cities. The second percentage shows fatalities without this restriction.

Only against a combined greater-than-expected Soviet ABM, air defense, and accurate ICBM force, costing the Soviets \$20 to \$30 billion at the high NIE, would our retaliatory forces need major new additions. Because of high cost and little return, the Soviets probably will not attempt to adopt such a posture. Moreover, because of uncertainties about performance and we should not deploy new systems as replacements for existing systems until threat appears which cannot be economically met by improving the existing systems. We should develop new systems only as options which would restore our Assured Destruction capability should the greater-than-expected threat occur, realizing that it is not likely to occur. Thus, we should select options with small initial costs. If the threat actually materializes, we can, by later investment, develop these options fully. (No augmentation is needed for FY 69-72. Hence, I am recommending against the deployment of the JCS-proposed for Polaris A-3s, which improve their capability against ABM only in that time period.)

The following table shows the effect of the combined greater-than-expected Soviet offensive and defensive threat on our Assured Destruction capability. It indicates the U.S. programmed force capability and the effects of buying SPA's, SPA's decoys, an advanced bomber decoy, and an air-to-air missile to protect bombers against an advanced interceptor.

U.S. ASSURED DESTRUCTION AGAINST GREATER-THAN-EXPECTED
SOVIET BALANCED OFFENSES AND DEFENSES
 (Percent of Soviet Population Killed)

FY 69 FY 70 FY 71 FY 72 FY 73 FY 74 FY 75 FY 76

Programmed Forces

a/ The first percentage shows fatalities if we are required to kill at least two-thirds of the people in defended cities. The second percentage shows fatalities without this restriction.

This table shows that even if the bomber defense missile works, the greater-than-expected threat would call for a more effective U.S. Assured Destruction capability by FY 76. In addition, for Assured Destruction we do not want to rely primarily upon bombers which depend upon tactical warning for survival. Therefore, our alternative is to provide our missile forces with added protection. The degree of this protection depends upon how much and for how long we are willing to rely on bombers in the interim. on Poseidon and when added to the above bomber options, result in 30% Soviet fatalities in 1976.) In any event, we should not take steps -- such as reducing the number of bomber bases -- that lessen our confidence in the bombers' survival.

D. Options to Protect Our Assured Destruction Capability

1. Increased Warheads on Poseidon

We are providing the production base so that by FY 74 we could put up to _____ on each Poseidon missile as a hedge against a heavy Soviet ABM or an increased threat to Minuteman.

2. Improve Our Bomber Force

Against improved terminal bomber defenses we can put SPAMs on B-52s in addition to the SPAMs on FB-111s. By initiating procurement in FY 70, the B-52s could be equipped with SPAMs by FY 72.

If Soviet air defenses improved, but their ABM did not, no increase in the size or expense of our strategic forces would be called for. However, for the cost of the present B-52 program we could improve our effectiveness by putting SPAMs on 195 B-52s and phasing out the other sixty.

If Soviet air defenses improved as part of a balanced Damage Limiting program, SRAMs plus penetration aids for the whole bomber force would prove worthwhile and would total about \$2.7 billion in ten-year systems costs above the present program.

3. Improvements to Minuteman Missiles

As a hedge against a heavy Soviet ABM system we could replace all the Minuteman II by Minuteman III/MIRV at a cost of \$1.9 billion over the present program. As a hedge against the failure of our penetration aids, at a cost of \$6.2 billion we could convert to 1,000 Minuteman III missiles and buy for each missile. We could have an all Minuteman III force by FY 76. We could develop for Minuteman as possible replacements for the present , or provide for additional Minuteman IIIs as an alternative to a new ICBM (item #6 below) if we should want more payload. This would cost about \$200 million in research and development (\$40 million in FY 69) for an IOC in FY 73. Procurement costs would be of which could be built per year.

4. Defense of Minuteman

Deployment of the light defense of Minuteman, shown below, might dissuade the Soviets from developing and deploying systems which otherwise could destroy Minuteman. In any event, it would provide a useful defense of Minuteman against the expected Soviet ICBM force without accurate MIRVs and furnish a base for developing a stronger defense against a Soviet force equipped with MIRVs. The median defense of Minuteman would protect against less. Finally, the heavy defense of Minuteman would guard against the very sophisticated counterforce threat assumed in the greater-than-expected threat for 1975 and 1976. The following table summarizes these three defenses.

LEVELS OF MINUTEMAN DEFENSE

<u>Sprints</u>	<u>Spartans</u>	<u>Investment Cost a/</u> <u>(\$ Millions)</u>	<u>Annual Costs</u> <u>(\$ Millions)</u>
Light Defense of Minuteman		\$400	\$10
Median Defense of Minuteman		1400	40
Heavy Defense of Minuteman		3600	160

a/ Defense of Minuteman is considered an add-on to the Sentinel anti-Chinese defense.

5. More Poseidon Submarines

We could order more Poseidon submarines which require a \$200 million investment per ship and a four-year lead time. By initiating procurement in FY 70 we could have ten new Poseidon submarines by the end of FY 75 and twenty by the end of FY 76. The more Poseidon missiles we have the less we would have to rely upon Minuteman.

If we chose to deploy additional Poseidon instead of defending or hardening Minuteman, and if Soviet ICBM accuracy improved markedly

Minuteman would become very vulnerable and invite rather than deter an attack. In this case, we should phase it out. Thus, choosing Poseidon might result in upsetting the balance of our forces. It would be undesirable to be without a land-based missile force as part of our offensive posture because we would become potentially more sensitive to unexpected Soviet advances in anti-submarine warfare.

6. New ICBM

Contract Definition begun in January 1968 would permit an IOC by FY 75. We could deploy this new missile in new silos as part of a defended or undefended fixed land-based system. Conversely, we could deploy it as a land-mobile or ship-based system or base it in a new class of submarines. In order to develop a new ICBM, we would require a \$2 to \$3 billion research and development program. The ten-year cost of buying a new ICBM totals some \$11 to \$20 billion.

The following table compares the costs of these alternatives against the greater-than-expected Soviet threat. The costs shown are over and above the cost of presently programmed forces. All options provide an Assured Destruction capability of 20% by missiles alone against the greater-than-expected Soviet threat in 1976.

COSTS OF VARIOUS MISSILE OPTIONS TO PROTECT ASSURED DESTRUCTION AGAINST GREATER-THAN-EXPECTED THREAT (\$ Billions)

RLD Program Costs (FY 68-76)

Revised January 15, 1969

If the Soviets do not react by developing and deploying small MIRVs, we can defend Minuteman at less cost than we could procure Poseidons. If they develop a small MIRV threat, the cost of Minuteman defense would about equal the cost of acquiring Poseidons. for Minuteman are not competitive with a light Minuteman defense, but they offer an alternative to heavier Minuteman defenses against the small-MIRV threat. A posture combining defense (calling for small-MIRVs) (calling the new ICBMs enjoys a clear cost advantage over defending Minuteman, putting Minuteman in super-hard silos, or acquiring Poseidons until the Soviet ABM becomes much stronger than the greater-than-expected threat.*

If we choose to buy more Poseidon, we would have to order them in FY 70 and FY 71, before we could see the extent of the Soviet threat. If we develop we would not have to decide to deploy them until FY 73.

A defense of Minuteman can be bought in stages and is likely to hold down the total cost of hedging our Assured Destruction capability. To deploy the heavy defense of Minuteman by FY 76, we would have to decide on the light defense by FY 70, the median defense by FY 71, and the heavy defense by FY 73. Other hedges, such as more Poseidon submarines or the Ballistic Missile Surface Ship, are unnecessary. can be built in response to the threat and they are competitive with the defense of Minuteman. The choice between of Minuteman depends on the direction the Soviet threat takes. To preserve the option to go either way, we should develop them both.

E. Advanced Manned Strategic Aircraft (A^WSA)

Recent studies have reviewed the value of a mixed ballistic missile/bomber force against reasonable projections of Soviet defenses into the 1970s. They show the bombers add some measure of assurance against greater-than-expected Soviet threats and induce the USSR to divert resources to their anti-bomber defenses. A mixed offensive force enjoys certain advantages against terminal defenses. By attacking some cities with missiles only, and others with bombers only, we force the Soviets to use more resources to protect all defended cities with both bomber and missile defenses. In order to accomplish this objective, however, we do not need large bomber forces

The previous section discussed the hedges to our programmed strategic offensive forces, especially to their missile components. Since we intend to keep the missile force well-hedged, the issue is whether we also want to hedge our bomber force with an A^WSA.

* This might happen sometime after 1976. Thus, in order to provide a basis for more total missile payload against a possible heavy ABM sometime after this date, continuing Advanced Development of a new ICBM is still desirable. Furthermore, the submarine-carried Advanced ICBM has some promise of eventually replacing Poseidon, in the 1980s, on an equal-cost basis

Is an AMSA a good hedge? It is not. Against the NIE range of threats our programmed forces are adequate. Since the strategic forces are already well-hedged, we can keep an Assured Destruction capability against greater-than-expected threats without the AMSA.

To counter a Soviet greater-than-expected threat, under most circumstances, including the most probable ones, U.S. offensive forces equipped with AMSA cost more than forces with equivalent effectiveness but without the advanced bomber.

What does AMSA cost as a hedge? To answer this question we must compare the cost of bomber forces needed to cope with various levels of Soviet threat. The following two tables make this comparison.

COSTS OF ALTERNATIVE FB-111/B-52 FORCES
(\$ Billions)

<u>Bomber Force</u>	<u>Program Costs (FY 68-82) a/</u>
A. 210 FB-111s	\$ 7.2
B. 210 FB-111s and 255 B-52s without SRAMs	12.4
C. 210 FB-111s and 255 B-52s with per B-52	15.3

a/ AMSA IOC in FY 76.

Force B represents the programmed force and would cope with the higher range of the NIE-projected Soviet strategic forces. It would also let us expand to meet a greater-than-expected Soviet threat. Force A, costing \$5.2 billion less, would be appropriate for the lower range of NIE threats. Force C adds SRAMs to the B-52s, providing the expansion needed to meet the greater-than-expected threat. This option would cost \$2.9 billion more than Force B.

The next table compares the cost of hedging against the greater-than-expected threat.

COSTS OF ALTERNATIVE STRONG BomBER FORCES OF EQUAL EFFECTIVENESS
(\$ Billions)

<u>Bomber Force</u>	<u>Program Costs (FY 68-82)</u>
C. 210 FB-111s and 255 B-52s with per B-52	\$15.3
D. 210 FB-111s and 68 AMSAs	15.3
E. 138 AMSAs	16.6

Both Force D and E are about equal in effectiveness to the programmed force plus SRAMs against the greater-than-expected threat, provided B-52 penetration aids work. Force D represents the smallest

AWSA force which we can use as a hedge. It costs \$2.9 billion more than the programmed forces. The all-AWSA Force E costs considerably more than either Force A or C, \$9.4 and \$1.3 billion respectively.

Considerations other than costs make the Force D option less attractive than Force C. First, developing AWSA requires a longer lead time than deploying SPAMs on B-52s, and imposes a substantial initial investment before we could determine that an increased Soviet threat has occurred. Conversely, since the SPAM option has a shorter lead time, we can delay the decision to deploy this missile until the increased threat begins to appear. Secondly, if we decide to proceed with AWSA now and the greater-than-expected threat does not appear, we will have wasted \$3 to \$10 billion.

In sum, to achieve equal effectiveness, AWSA contributes only marginally at great cost. Thus, Engineering Development is not called for now. However, we should proceed with Advanced Development to provide aircraft technology and to keep open the option of replacing the B-52s.

IV. STRATEGIC DEFENSE

A. Damage Limiting Against the Soviet Threat

Our Assured Destruction capability makes any kind of nuclear war with the Soviets unlikely. Therefore, we first buy enough forces to give us high confidence in our deterrent. As insurance in the unlikely event deterrence fails, we then consider adding forces that might reduce damage to our population and industry. Damage Limiting forces, unlike those for Assured Destruction, cannot and need not work perfectly under all conditions. They should insure against the more probable risks, such as wars growing out of a deep crisis, or threats posed by the growth of Chinese nuclear forces. The basic Damage Limiting question is whether we should deploy Nike-X in defense of our cities.

A defensive system to save U.S. cities from a Soviet nuclear attack must attempt to keep ahead of the Soviet threat, including their reactions to our deployment. In this analysis we use two stages in such a deployment. The first, "Posture A", represents a light defense of cities. It has an area defense of the entire CONUS, providing overlapping coverage of key targets. It has a relatively low-density Sprint defense of cities. It is estimated that initially it would cost about \$9 billion in investment and \$600 million a year to operate. The second, "Posture B", is a heavier defense with a higher density Sprint defense of cities. It is estimated that initially it would cost \$18 billion and \$1.1 billion a year to operate. Because of probable Soviet reaction, with Posture B we would also need improved air and civil defense forces at a cost of \$4 to \$5 billion in investment. Moreover, experience convinces me that the pursuit of effective defenses would eventually lead us to spend about \$40 billion.

The U.S. can justify the cost of a major defense only if it could take away the ability of the Soviets to kill Americans. The following table illustrates the effects of these defenses if Nike-X works as designed and if the Soviets do not react to the U.S. ABM. The USSP's estimate of its ability to strike back after a U.S. first strike on its forces might prove lower than shown if the Soviets judge the uncertain factors pessimistically, as we do in making our own Assured Destruction calculations.

U.S. KILLED IN ALL-OUT STRATEGIC EXCHANGE IN 1976
ASSUMES NO SOVIET REACTION TO U.S. ABM
(In Millions)

<u>U.S. Programs</u>	<u>Soviets Strike First</u>		<u>U.S. Strikes First</u>	
	<u>U.S. Fatalities</u>	<u>Soviet Fat.</u>	<u>U.S. Fatalities</u>	<u>Soviet Fat.</u>
Approved Program (Sentinel)				
Posture A <u>a/</u>				
Posture B				

a/ The JCS currently recommend this deployment.

b/ Enough forces are withheld from the U.S. first strike after their retaliation.

This table shows that if the Soviets do not respond, they lose their deterrent. They would be forced to react to increase the ability of their forces to survive and strike back. They could do so in several different ways: (1) by stepping up deployment of SS-9s and SS-11s now in production; (2) by defending their present missile force; (3) (4) by deploying a new, large ICBM (either mobile or defended); or (5) by deploying a new submarine-launched missile like our Poseidon. They have the technical capability to do any of these things by the mid-1970s.

If the Soviets choose to respond to our ABM.

A larger Soviet response could raise probable U.S. fatalities still higher.

U.S. KILLED IN ALL-OUT STRATEGIC EXCHANGE IN 1976
ASSUMING SOVIETS RESPOND TO U.S. ABM
(In Millions)

<u>U.S. Programs</u>	<u>Soviets Strike First</u>		<u>U.S. Strikes First</u>	
	<u>U.S. Fatalities</u>	<u>Soviet Fat.</u>	<u>U.S. Fatalities</u>	<u>Soviet Fat.</u>
Approved (Sentinel)				
Posture A				
Posture B				

As part of their response, the Soviets could add large numbers of offensive missiles that would threaten our Assured Destruction capability. We, in turn, would have to react. Viewing each other's buildup in forces as an increased threat, each side would undertake counteracting steps, thereby increasing the costs to both with no gain in security. Therefore, I believe deploying the Nike-X system to protect American cities would be neither wise nor effective.

B. Protection Against Small Urban Attacks

A light U.S. ABM system would protect against a Chinese ICBM attack. By protecting the U.S. against such a threat, it probably would enhance our ability to deter Chinese nuclear intimidation of other Asian countries. Much as a light Soviet ABM system reduces the chances that France could draw the U.S. and the Soviet Union into a nuclear war, a light U.S. ABM system lessens China's ability to do so. The area defense of CONUS would give us a realistic Damage Limiting capability against China for the mid-1970s, as shown in the next table.

U.S. FATALITIES IN A SMALL-SCALE ATTACK a/
(In Millions)

<u>Number of ICBMs</u>	<u>U.S. Strikes First</u>			<u>China Strikes First</u>		
	<u>10</u>	<u>25</u>	<u>75</u>	<u>10</u>	<u>25</u>	<u>75</u>
No Defense	0	1	3	5	10	20
Light ABM	0	b/	b/	b/	b/	1

a/ Assumes three megaton ICBMs, 40% reliability.

b/ Fewer than one million U.S. dead, with some probability of no deaths.

C. Civil Defense

Civil Defense provides low cost insurance for our people in the unlikely event of a nuclear attack. As a by-product it has also proven to be a significant aid in natural disasters. This program should be pursued. More effort is needed to identify useful shelters in home basements. This can fill a large part of the current shelter deficit at a very low cost — about \$0.45 per space added.

D. Continental Air Defense

The number of lives which would be saved by air defense if the Soviets were to attack the U.S. depends on our ballistic missile defense. With only a light missile defense, even a very strong air defense could not save many lives. The Soviets could simply target cities with their missiles. A Soviet first strike, with missiles only, could kill 120 million people;

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their bombers could then add less than ten million fatalities even if we had no air defense at all. A force of either 200 improved F-106 interceptors with AWACS (ten-year cost \$9.9 billion) or 54 F-12s with AWACS (ten-year cost \$11.6 billion) would reduce these fatalities by less than five to eight million

However, there are other objectives of continental air defense which must also be considered. These include defense against countries other than the Soviet Union, defense against bomber attacks on those strategic forces that we withhold in a controlled nuclear war, peacetime patrolling of our air space, discouraging Soviet bomber aspirations, and the use of continental air defense forces in missions outside the U.S. We can achieve these objectives with a modern, more effective air defense force that costs less over the next twelve years than our present force. This modern force will consist of 200 improved F-106 fighters (the F-106X), 42 AWACS, two OTH radars, and the Federal Aviation Agency National Air Space system for back-up command and control. The cost through 1979 for the modern force is \$13.7 billion compared with \$13.9 billion for the current force. However, the lower operating costs of the modern force will result in substantial savings over the present force after FY 79.

Surveillance is presently the weakest part of our air defense system. Therefore, we should proceed with engineering development of AWACS (if the Overland Radar Technology program is successful) and with development of back-scatter OTH radars. We should also develop, and deploy on the F-106, advanced air-to-air missiles and an advanced fire control system. With these improvements to the F-106, there is little to be gained from the high performance characteristics of the F-12. Thus, we can avoid the additional \$1.7 billion cost of an F-12 force and still meet our air defense objectives.